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Is it safe to exercise at indoor sports facilities despite the risk of viral infection? The moderating effect of psychological risk.

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The main goals of the present study are to examine (1) the effect of perceived knowledge about COVID-19 on attitudes and subjective norms; (2) the effect of attitudes, subjective norms, and perceived behavioral control on behavioral intentions to exercise at indoor sports facilities (applying the theory of planned behavior); and (3) the moderating effects of psychological risk on the variables of interest. The present study collected data from amateur athletes from November 20 to December 15, 2022. Structural equation modeling with maximum likelihood estimation was used to test the variables' relationships. The Jamovi statistical software was also used to conduct a moderation analysis. Results indicated significant impacts of (1) perceived knowledge on attitudes and subjective norms and (2) attitudes, subjective norms and perceived behavioral control on behavioral intentions. Moreover, psychological risk moderated these effects.

Introduction

COVID-19, a coronavirus causing an uncommon form of pneumonia that emerged in December 2019 in Wuhan, the capital of Hubei Province in the People's Republic of China, has spread across China and around the world (Wu, Leung, & Leung, 2020; Zhu et al., 2020). COVID-19 was initially identified as a simple respiratory disease of unknown origin but later was determined to be a new type of virus associated with large seafood and live animal markets, indicating the transmission of the virus from animals to humans (Rupani et al., 2020). The World Health Organization declared the COVID-19 outbreak a pandemic in March 2020 following a separate formal declaration ("Public Health Emergency of International Concern")

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in January. As COVID-19 can spread through contact with infected persons, governments attempted to curb the spread of the virus by implementing social distancing. People's daily lives changed completely as social contact and freedom of movement were heavily restricted (Sunwoo & Jeong, 2021). Many educational facilities and places of business were closed, and many festivals, religious gatherings, and social events were canceled or postponed (Singh, & Singh, 2020).

Due to COVID-19, scenes of countless spectators gathered at stadiums to cheer on their favorite teams and individuals exercising daily at the gym suddenly disappeared. In the case of professional sports such as the English Premier League, the German Bundesliga, and the U.S. MLB, NBA, and NHL, games were suspended for several months and later were played without spectators (Jeong, 2021). In South Korea (Korea hereafter), as the number of games without spectators increased, professional sports clubs suffered serious financial difficulties due to decreases in admissions income, sponsors, and sales of club products during the 2020 season (Jeong, Kim, & Yu, 2021). Likewise, indoor sports facilities such as Taekwondo gyms, fitness centers, swimming pools, billiards rooms, and table tennis courts suffered economically as they were frequently restricted from operating in accordance with the Korean government's recommendations. As of January 2023, the government's ban on indoor sports facilities has been lifted, but many indoor sports facilities have not returned to pre-pandemic sales (Sunwoo & Jeong, 2021). Thus, for future success of indoor sports facilities, it is crucial for managers or marketers of indoor sports facilities to understand the decision-making process of consumers for visiting indoor sports facilities with the risk of virus infection or reinfection not completely gone.

Such decision making might be explained by the theory of planned behavior (TPB), an extension of the theory of reasoned action (TRA; Bosnjak, Ajzen, & Schmidt, 2020). The TPB is one of the most popular individual behavioral motivation models in social sciences such as sociology, psychology, and education. The theory indicates that people act rationally, according to their attitudes, subjective norms, and perceived behavioral control (PBC). The sports marketing literature has also relied heavily on the TPB to predict sports consumers' decision making and other behaviors (Kim & James, 2016; McCullough, 2013). Furthermore, the current study examines the effect of perceived knowledge about COVID-19 on attitudes and subjective norms. There is an increasing amount of evidence for the important role of perceived knowledge in improving attitudes and subjective norms based on the TPB (Guerin & Toland, 2020; Han et al., 2020). Intuitively, when consumers' knowledge is sufficient to reduce possible uncertainty, they are likely to

act rationally in their decision-making processes. However, little empirical sports marketing research has explored the concept of perceived knowledge using the TPB.

One unique contribution of this study is its examination of the moderating effects of psychological risk, an important predictor of consumer behavior (Jeong, 2021). As the Korean government has recently considered lifting the obligation to wear masks in public indoor spaces, it is highly likely that people will exercise at indoor sports facilities without masks in 2023. Managers of indoor sports facilities are paying close attention to these developments because some customers are hesitant to visit facilities where others exercising without masks. If psychological risk moderates the relationships among the research variables, then managers or marketers can segment consumers according to their levels of perceived psychological risk. Thus, applying the TPB, the main goals of the present study are to examine (1) the effect of perceived knowledge about COVID-19 on attitudes and subjective norms; (2) the effect of attitudes, subjective norms, and perceived behavioral control on behavioral intentions to exercise at indoor sports facilities; and (3) the moderating effects of psychological risk on the variables of interest, addressing several gaps in the existing literature.

Literature Review

The Theory of Reasoned Action and Theory of Planned Behavior

The TPB has been applied to explain and predict consumers' intentions and behaviors in various fields of research (Verma & Chandra, 2018). The TPB is rooted in the TRA, which posits that human decisions are volitional (Ajzen, 1985), and much of human behavior is predictable because decisions are frequently associated with logical or deductive reasoning (Ajzen & Fishbein, 1980). The TRA holds that attitudes and subjective norms are two main factors that influence individuals' intentions to perform a certain behavior (Kim et al., 2020). People tend to behave in ways that yield positive results and follow the guidance of important individuals when they make decisions based on the consequences of the alternatives (Ajzen & Fishbein, 1980; Yeh et al., 2021). In this context, an attitude is defined as the degree to which individuals value a particular behavior or perceive it (un)favorably (Ajzen, 1991; Knauder & Koschmieder, 2019). The stronger one's positive attitude toward a particular behavior, the greater the probability of one's performing that behavior (Verma & Chandra, 2018). A subjective norm is defined as how

relevant individuals value the (non)performance of a particular behavior and the ability of significant others (e.g., family, friends, colleagues) to affect one's decision making (Knauder & Koschmieder, 2019; Verma & Chandra, 2018).

On the other hand, if someone has a low salary or little time to shop due to frequent overtime or weekend work, it is highly likely that they will not have the money or the opportunity to exercise at an indoor sports facility. Accordingly, scholars have pointed out that the assumption of complete voluntary control has some limitations when applying the TRA to predict human behavior (Ajzen, 2020). For this reason, many researchers have opined that an expanded version of the TRA is needed to better understand human behavior (Jeong et al., 2021). Thus, Ajzen (1991) introduced the TPB that incorporates an additional construct, *perceived behavioral control* (also labeled as a non-volitional factor), which is defined as "the estimation of one's resources, skills and competences necessary to show the respective behavior" (Knauder & Koschmieder, 2019, p. 67). Precisely, PBC represents how efficiently people can control the factors that enable or constrain the actions necessary to cope with a particular situation. Since the TPB was developed, researchers have devoted most of their efforts to verifying PBC's direct effect on behavioral intentions (Jeong & Kim, 2022).

Perceived Knowledge

Through traditional mass media offering one-way communication (e.g., television, newspapers, radio, and magazines) or social media offering two-way communication (e.g., YouTube, Instagram, Meta, Twitter, and WhatsApp), consumers gain knowledge about phenomena such as objects, products, events, and issues. The knowledge and beliefs that have evolved in their complexity through mass media or social media enable consumers to recognize, interpret, evaluate, and remember such phenomena. As a result, a large knowledge base can make consumers less susceptible to false information in their decision-making processes and act reasonably under the circumstances. Considered as an important source of competitive advantage, consumers' perceived knowledge has long been recognized as a key factor in understanding their behaviors (Lim et al., 2019). In the TPB, knowledge, which is a cognitive variable, also plays a pivotal role in explaining a variety of behaviors. For example, Karimi et al. (2021) examined important factors affecting students' pro-environmental intentions and behaviors using the TPB, demonstrating a direct relationship between pro-environmental knowledge and behavioral intentions. As mentioned before, other studies have explored knowledge's effects on attitudes and subjective norms (Dumitrescu

et al., 2011; Guerin & Toland, 2020; Han et al., 2020). In the sports sector, as consumer knowledge is also considered a significant strategic resource, improving our understanding of consumer knowledge helps sports organizations develop relationships with consumers (Behnam, Doyle, & Delshab, 2020). For example, if indoor sports facility users acquire information about a virus or epidemic through various modes of communication, they are likely to avoid a situation in which they have insufficient knowledge to act (Han et al., 2020). Accordingly, sports consumers with a high level of knowledge are more likely to espouse positive attitudes and subjective norms.

Psychological Risk

Bauer (1996) introduced the concept of *perceived risk*, stating that if individuals perceive that their behavior is likely to produce unexpected consequences, they will try to avoid the behavior as much as possible because it involves risk. Over the past few decades, perceived risk has attracted much attention in diverse research areas. Perceived risk is concerned only with someone's subjective evaluation of their risk, not actual (objective) risk, and decisions are likely to lead to negative outcomes (Liao, Lin, & Liu, 2010). Perceived risk is therefore a useful construct for understanding individuals' behavior and, more specifically, consumers' decision- making processes and post-purchase behaviors (Ariffin, Mohan, & Goh, 2018).

Psychological risk, the key component of perceived risk, is considered as a cognitive process in consumer behaviors. In marketing specifically, psychological risk refers to the possibility for psychological injury when consumers purchase a product or service. The most important aspect of psychological risk in sports marketing is sports-related concerns. For example, professional baseball spectators can be injured by foul balls or home runs, and gymgoers can damage joints or ligaments while exercising excessively without considering their athletic ability or physical characteristics. The psychological risks accompanying these concerns include anxiety, discomfort, fear, and unnecessary tension (Han et al., 2020), which can influence individuals' sports-related decision making. Thus, individuals perceiving high psychological risk are more susceptible to the effects of attitudes, subjective norms, and PBC on behavioral intentions compared to those perceiving low psychological risk.

Hypotheses

Existing studies have identified the possible influence of perceived

knowledge on attitudes and subjective norms. Particularly, in the tourism sector, Han et al. (2020) aimed to develop a conceptual framework that describes US international tourists' post-pandemic travel behaviors and found that perceived knowledge about COVID-19 played a key role in improving attitudes and subjective norms. Suki's (2016) study also revealed that green brand knowledge is an antecedent of consumers' attitudes toward green brands. Additionally, Jeong and Kim (2022) attempted to identify the factors influencing the purchasing intentions and behavior of sustainable fashion consumers and demonstrated the influence of knowledge on consumers' attitudes and subjective norms. Consistent with literature, we hypothesize the following:

$\mathbf{H_{1a}}$: Perceived knowledge positively influences attitudes.

$\mathbf{H_{1b}}$: Perceived knowledge positively influences subjective norms.

Further, several studies have shown that attitudes, subjective norms, and PBC could positively influence behavioral intentions. For instance, applying the TPB, Lim and An (2021) explored antecedents of consumers' intentions to purchase health food and found that attitudes, subjective norms, and PBC were important predictors. A recent study by Liu et al. (2021) demonstrated that attitudes, subjective norms, and PBC had significant positive effects on Chinese citizens' post-pandemic outbound travel intentions. Varah et al. (2021) investigated young consumers' intentions toward purchasing green products using an extended version of the TPB, and the results supported all their hypotheses. Thus, we propose the following hypotheses:

$\mathbf{H_{2a}}$: Attitudes positively influence behavioral intentions.

$\mathbf{H_{2b}}$: Subjective norms positively influence behavioral intentions.

$\mathbf{H_{2c}}$: Perceived behavioral control positively influences behavioral intentions.

Finally, psychological risk might moderate the relationships between (1) attitudes and behavioral intentions, (2) subjective norms and behavioral intentions, and (3) PBC and behavioral intentions. As discussed previously, attitudes, subjective norms, and PBC can influence behavioral intentions (Lim & An, 2021; Liu et al., 2021; Varah et al., 2021). Pelaez, Chen, and Chen (2019) conducted a meta-analysis to determine perceived risk's effect on purchase intentions and found that the literature generally has demonstrated a negative relationship between the two variables. Furthermore, it has been widely acknowledged that perceived risk exerts a moderating influence on the relationship between these variables. For example, Habibi and Rasoolimanesh (2021) confirmed the moderating role of perceived risk in the relationship between service quality and perceived value. Belanche, Casaló, and Guinalíu (2012) explored the effects of website usability on both consumers'

satisfaction and intentions to use a website, and their results indicated that usability's effect on consumer satisfaction was moderated by perceived risk. Based on these findings, we propose the following hypotheses:

H_{3a}: Psychological risk moderates the influence of attitudes on behavioral intentions.

H_{3b}: Psychological risk moderates the influence of subjective norms on behavioral intentions.

H_{3c}: Psychological risk moderates the influence of perceived behavioral control on behavioral intentions.

Figure 1 presents the research model.

Method

Participants

The current study used convenience sampling to recruit participants. To collect a representative sample, the authors approached five sports clubs (groups of people formed for the purpose of playing sports) in Seoul, South Korea, contacted the president of each of the clubs, and distributed the survey to club members November 20 to December 15, 2022. Due to COVID-19, the surveys were administered virtually via e-mail or Kakao Talk (the most widely used messaging app for smartphones and personal computers in South Korea) using Google or Naver (the largest web search engine in South Korea) after obtaining consent. We asked a total 300 club members to take part in the survey. Of these, 271 completed the survey, yielding

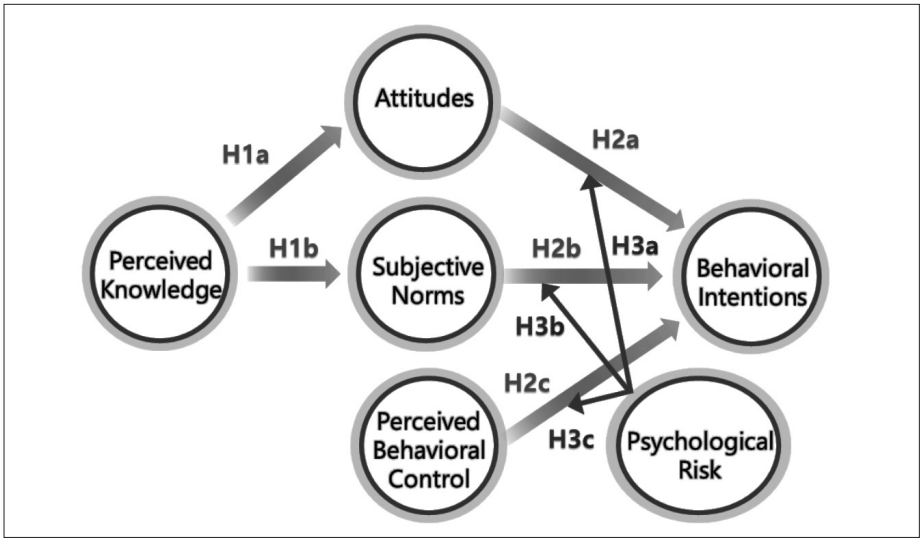

Fig. 1 - Proposed conceptual model.

a response rate of 90.3%. We eliminated data from 10 participants due to repetitive response patterns; thus, we analyzed 261 usable responses. We gathered demographic information, including sex (male: 50.2%, *n* =131; female: 49.8%, *n* =130), age (20s: 17.7%, *n* = 45; 30s: 14.2%, *n* = 37; 40s: 37.9%, *n* = 99; 50+: 30.7%, *n* = 80), education (high school graduate: 20.3%, *n* = 53; advanced degree: 13%, *n* = 34; college graduate: 49.8%, *n* = 130; graduate degree: 16.9%, *n* = 44), and frequency of exercise per week (0 times: 6.5%, *n* = 17; 1 or 2 times: 23%, *n* = 60; 3 or 4 times: 42.9%, *n* = 112, more than 5 times: 27.6%, *n* = 72).

Measurement

All the measures of the research variables were adopted from the extant consumer behavior and social psychology literature. Perceived knowledge was assessed with three items adopted from Han et al. (2020). Attitudes were measured with four items adopted from Han, Meng, and Kim (2017), Jeong et al. (2021), and Kim et al. (2020). The scales were "negative-positive," "bad-good," "foolish-wise," and "unpleasant-pleasant," with responses ranging from 1 to 5. Subjective norms were assessed with three items adapted from Ajzen (2011) and Kim et al. (2020). PBC was assessed with three items adopted from Ajzen (1991), Han et al. (2017), and Perugini and Bagozzi (2001). Behavioral intentions were measured using three items adopted from Han et al. (2017) and Jeong (2021). Psychological risk was assessed with four items adopted from Han et al. (2020) and Jeong (2021). Participants rated these items on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). A panel of two sociology of sport and sport management professors reviewed the full questionnaire's content validity. Based on their feedback, we modified the preliminary questionnaire before distributing it to participants.

Data Analysis

Data were analyzed using SPSS and AMOS. SPSS was used to conduct frequency, correlational, and reliability analyses. AMOS was used to perform confirmatory factor analysis and structural equation modeling (SEM). Jamovi was used to conduct simple slope analyses in cases of interaction effects.

Results

Validity and Reliability

The present study employed confirmatory factor analysis (CFA) with maximum likelihood estimation to confirm the dimensionality of the measurement model. The goodness-of-fit indices for the CFA ($x^2/df = 1.820$, NFI = 0.939, RFI = 0.917, TLI = 0.961, CFI = 0.971, RMSEA = 0.056) were all within the recommended ranges (Hooper, Coughlan, & Mullen, 2008).

For convergent validity to be considered satisfactory, we calculated factor loadings, construct reliability (CR), and averaged variance extracted (AVE) based on the measurement model. As shown in Table I, all factor loadings (0.694 – 0.956) were statistically significant ($p < .001$) and greater

TABLE I
Confirmatory Factor Analysis Results

Scale Items	Standardized Loadings	CR	AVE	Cronbach's
Perceived Knowledge				
Compared with the average person, I know the facts about COVID-19	0.917			
Compared with my friends, I know the facts about COVID-19	0.956	0.969	0.912	0.946
Compared with people who work out frequently, I know the facts about COVID-19	0.899			
Attitudes				
These days, exercising at indoor sports facilities is Extremely negative – Extremely positive	0.849			
These days, exercising at indoor sports facilities is Extremely bad – Extremely good	0.901	0.948	0.820	0.903
These days, exercising at indoor sports facilities is Extremely foolish - Extremely wise	0.789			
These days, exercising at indoor sports facilities is Extremely unpleasant - Extremely pleasant	0.811			
Subjective Norms				
People who are important to me (e.g., family/friends) would approve of me exercising at indoor sports facilities	0.869			
People who are important to me (e.g., family/friends) would think positively that I exercise at indoor sports facilities	0.920	0.935	0.828	0.878
People who are important to me (e.g., family/friends) are likely to exercise at indoor sports facilities	0.751			
Perceived Behavior Control				
It is entirely up to me whether to exercise at indoor sports facilities or not	0.814			
If I want, I can exercise at indoor sports facilities	0.907	0.919	0.792	0.829
I have enough knowledge and experience to decide whether to exercise or not at indoor sports facilities	0.694			
Behavioral Intentions				
I can still exercise at indoor sports facilities	0.867			
I will think positively that I will continue to exercise at indoor sports facilities	0.909	0.970	0.914	0.929
I am likely to continue exercising at indoor sports facilities	0.936			
Psychological risk				
The thought of someone else exercising without a mask at indoor sports facilities make me nervous	0.877			
The thought of someone else exercising without a mask at indoor sports facilities makes me feel psychologically uncomfortable	0.938			
The thought of someone else exercising without a mask at indoor sports facilities causes me to experience unnecessary tension	0.905	0.907	0.709	0.923
The thought of someone else exercising without a mask at indoor sports facilities makes me feel my heart beats fast	0.750			

(x^2/df = 1.820, NFI = 0.939, RFI = 0.917, TLI = 0.961, CFI = 0.971, RMSEA = 0.056

than the cutoff value of 0.50 (Hair et al., 2010). All CR values (0.907–0.970) exceeded the minimum requirement of 0.7 and all AVE values (0.792–0.914) exceeded the recommended value of 0.5 (Tabachnick & Fidell, 2007). As all the factor loadings, CR values, and AVE values met the minimum thresholds, convergent validity was established.

To confirm discriminant validity, the diagonal elements in Table II needed to be greater than the off-diagonal elements, which was the case. Comparing all correlation coefficients with the square roots of AVE demonstrated satisfactory discriminant validity.

As shown in Table I, reliability estimates (Cronbach's alpha) for perceived knolwdge, attitudes, subjective norms, PBC, behavioral intentions and psychological risk (0.829 – 0.946) exceeded the recommended threshold of 0.7, showing that the measures were reliable (Fornell & Larcker, 1981).

Model Fit and Structural Model

The present study employed SEM to explore the hypothesized relationships among the variables of interest. All goodness-of-fit indices for the model indicated an acceptable model fit (x^2/df = 2.482, IFI = 0.901, CFI = 0.900, RMSEA = 0.066). This model was used to test hypotheses 1a, 1b, 2a, 2b, and 2c. As shown in Figure 2, the relationship between perceived knowledge and attitudes (H1a) was significant (r = 0.224, $p < .001$). The path from perceived knowledge to subjective norms was also significant (r = 0.211, $p < .01$), supporting H1b. Attitudes had a significant positive effect on behavioral intentions (r = 0.235, $p < .001$), supporting H2a. Likewise, the relationship between subjective norms and behavioral intentions was positive and significant (r = 0.281, $p < .001$), supporting H2b. Finally, PBC had a significant positive relationship with behavioral intentions (r = 0.699, p <

TABLE II
Correlations between Constructs

Construct	Perceived Knowledge	Attitudes	Subjective Norms	PBC	Behavioral Intentions	Psychological risk
Perceived Knowledge	**0.955**					
Attitude	0.212**	**0.906**				
Subjective Norm	0.192**	0.701**	**0.910**			
PBC	0.183**	0.557**	0.551**	**0.890**		
Behavioral Intention	0.153*	0.613**	0.634**	0.781**	**0.956**	
Psychological risk	-0.082	-0.350**	-0.329**	-0.334**	-0.393**	**0.842**

**$p < .01$, *$p < .05$

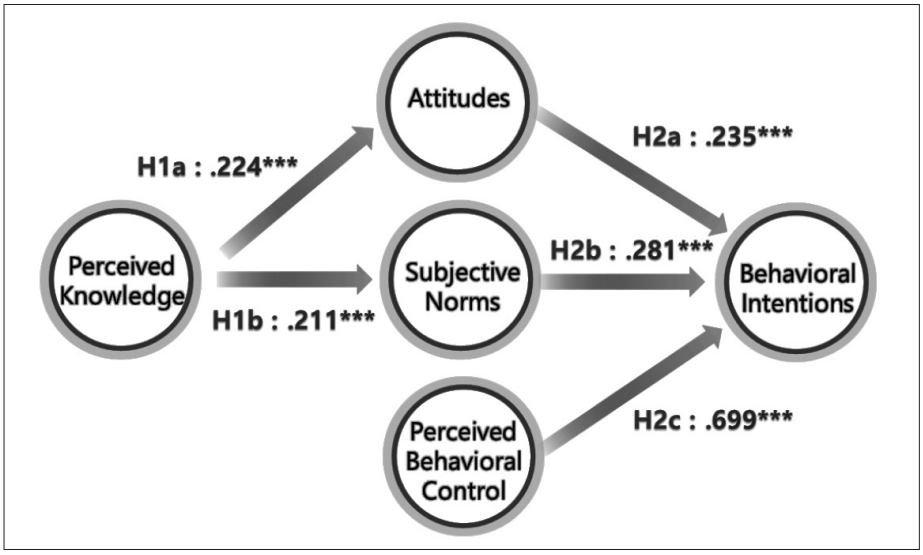

Fig. 2 - Structural model results. **p<0.01, ***p<0.001

.001), supporting H2c.

Moderating Effect

As posited by H3a, attitudes (Z = 10.88, $p < .001$), psychological risk (Z = -4.56, $p < .001$), and their interaction (Z = -2.59, $p < .01$) had significant effects on behavioral intentions, thereby supporting H3a (See Table III). As posited by H3b, subjective norms (Z = 12.39, $p < .001$), psychological risk (Z = -5.14, $p < .001$), and their interaction (Z = -4.15, $p < .01$) had significant effects on behavioral intentions, thereby supporting H3b (See Table III). As posited by H3c, PBC (Z = 19.03, $p < .001$), psychological risk (Z = -4.54, $p < .001$), and their interaction (Z = -2.53, $p < .05$) had significant effects on behavioral intentions, thereby supporting H3c (See Table III). In H3a, H3b, and H3c, the independent variable exhibits a positive sign, the moderator variable demonstrates a negative sign, and their interaction also displays a negative sign, indicating the presence of a buffering effect. Table III also displays the outcomes of the simple slope test to assess significance. The moderator variables are categorized into three groups, aiming to examine how

TABLE III.
Moderating Effects of Psychological risk

		H3a			
Moderation		Estimate	SE	Z	*p*
	Attitudes	0.501	0.0461	10.88	< .001
	Psychological risk	-0.130	0.0285	-4.56	< .001
	Attitude × Psychological risk	-0.104	0.0401	-2.59	0.009
Simple Slope Analysis		Estimate	SE	Z	*P*
	Average	0.502	0.0465	10.79	< .001
	Low (–1SD)	0.396	0.0657	6.04	< .001
	High (+1SD)	0.607	0.0580	10.47	< .001
		H3b			
Moderation		Estimate	SE	Z	*p*
	Subjective Norms	0.517	0.0418	12.39	< 0.001
	Psychological Risk	-0.137	0.0266	-5.14	< 0.001
	Subjective Norms × Psychological Risk	-0.150	0.0363	-4.15	< 0.001
Simple Slope Analysis		Estimate	SE	Z	*p*
	Average	0.517	0.0428	12.08	< 0.001
	Low (1SD)	0.364	0.0572	6.38	< 0.001
	High (+1SD)	0.670	0.0567	11.83	< 0.001
		H3c			
Moderation		Estimate	SE	Z	*p*
	PBC	0.722	0.0380	19.03	< 0.001
	Psychological Risk	-0.102	0.0225	-4.54	< 0.001
	PBC × Psychological Risk	-0.103	0.0406	-2.53	0.011
Simple Slope Analysis		Estimate	SE	Z	*p*
	Average	0.722	0.0385	18.8	< 0.001
	Low (–1SD)	0.618	0.0592	10.4	< 0.001
	High (+1SD)	0.827	0.0539	15.3	< 0.001

the moderator's level specifically influences the impact of the independent variable on the dependent variable.

Discussion and Conclusion

THEORETICAL IMPLICATIONS

Our findings indicate that with enhanced knowledge about COVID-19, sports consumers can improve both their attitudes toward exercising at indoor sprots facilities and their subjective norms (H1a and H1b). These results imply that consumers will gain sufficient knowledge about virus prevention as they learn more about COVID-19 through various media and in turn will take precautions to avoid infection. Ultimately, these efforts can positively change their attitudes toward indoor exercise, and consumers will believe that significant others will not worry excessively about them when they engage in indoor sports such as yoga, swimming, kickboxing, racquetball, and so on. These conclusions align with some past studies in the consumer behavior and marketing domains. For example, Han et al. (2020) applied the TPB and demonstrated that perceived knowledge of COVID-19 is an adequate predictor of attitudes toward behavior (engaging in post-pandemic travel) and subjective norms. As mentioned before, although some studies have examined consumers' decision-making processes, efforts to understand consumers' perceived knowledge have been limited in the context of sports marketing. Thus, the current study has many theoretical and practical implications, as the results demonstrate the key role of sports consumers' knowledge of a particular disease in improving associated attitudes and subjective norms.

This study demonstrated that attitudes, subjective norms, and PBC are positively and significantly related to behavioral intentions (H2a, H2b and H2c). The results are consistent with those of existing studies. For instance, Wang, Won, and Jeon (2021) found that attitudes were the most important determinant of sports gambling intentions, followed by subjective norms. Braksiek, Thormann, and Wicker (2021) also drew on the TPB to investigate the effects of attitudes, subjective norms, and PBC on sports club members' intentions to engage in environmentally friendly behavior, showing that these three variables were direct antecedents of intentions. A study conducted by Das et al. (2021) explored factors affecting intentions to engage in social distancing during the COVID-19 outbreak and found that attitudes toward social distancing, subjective norms, and PBC significantly influenced these behavioral intentions. Notably, of the three psychological variables postulated by the TPB, attitudes had the weakest direct effect on behavioral intentions in this study. On the other hand, PBC had the strongest direct effect on behavioral intentions. This highlights the important role played by the perceived ease or difficulty of performing the behavior. In this respect, when sports consumers decide whether to go to the gym, they may consider potential obstacles. For example, if a new coronavirus variant emerges and the number of people infected with the new virus rapidly increases, as sports

consumers lack sufficient knowledge about the virus, they will likely be hesitant to visit indoor sports facilities. Therefore, governments should make continuous efforts to provide convenient and accurate information about variant cases and to sustain high-quality health systems.

This study contributes to our understanding of how psychological risk moderates the relationships between various predictors and behavioral intentions. In this study, sports consumers' attitudes, subjective norms, and PBC directly affected their behavioral intentions, while their perceived psychological risk made these effects stronger or weaker. Indeed, because sports consumers have different perceptions about exercising at indoor sports facilities despite potential viral infection, they may perceive different levels of psychological risk involved in visiting the sports facilities. To our knowledge, this study is the first to verify the moderating effect of psychological risk in this context. A recent study exploring the moderating effect of psychological risk on the relationship between attitudes and behavioral intentions showed that the path was not significantly different between the high psychological risk group and the low psychological risk group. However, this was not the case in the present study, a finding which could deepen our understanding of sports consumers' psychology.

Practical Implications

The present findings could provide important managerial insights. To increase sports consumers' perceived knowledge about viruses, federal or local governments should continue to provide convenient and accurate information. Importantly, the public must understand the language used to describe the virus when the government holds a press conference. According to a South Korean survey company, five out of 10 virus-related terms frequently used in government press releases and briefings have never been heard by the public. In other words, the public is generally unfamiliar with scientific terminology, including that related to COVID-19. Understanding this terminology is directly related to public health, and the damage could be exacerbated if people do not understand the terms accurately in time. Therefore, governments should make efforts to convey public health messages in readily understandable terms.

The findings also should encourage managers or marketers to make continued efforts to reduce sports consumers' perceptions of risk concerning COVID-19 and strengthen their intentions to visit indoor sports facilities. For example, new guidelines could include avoiding excessive conversations,

keeping a moderate distance, ventilating spaces frequently, and washing hands with soap for at least 20 seconds before entering or leaving the facility. Although the spread of COVID-19 has decreased significantly, the virus may spread if users of indoor sports facilities do not follow those guidelines. Therefore, managers should be familiar with such guidelines and take responsibility for customers' health to retain them. These efforts will ultimately contribute to enhancing attitudes, subjective norms, and PBC, as well as reducing psychological risk.

Limitations

The present study has a few limitations that provide opportunities for future research. First, this study recruited South Korean sports consumers as its sample. Korean sports consumers' behavior and psychology likely differ from those of people in other countries. Thus, to replicate our findings, similar studies are required in other locations. Second, the current study did not examine all antecedents of attitudes, subjective norms, and PBC, including the positive impact of expectation. Additional studies are required to explore the effects of more of these relevant predictor variables. Finally, psychological risk was analyzed as a potential moderator of the relationships between the research variables. Nonetheless, the effects of other potential moderators should be explored to develop a more comprehensive framework.

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