

An Associative Study: Evaluating Perceived Risk Management and Risk Perception in Physical Activity Among University Students

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ABSTRACT

*The spread of COVID-19 has underscored the critical importance of the risk management process, which is believed to significantly influence risk perception. This study aimed to explore the connection between the risk management process and risk perception concerning engagement in physical activities among students from public universities in Perlis. 390 students participated in the survey. This study used the RAFF-Q and Perception of Physical Activity Score. The data was collected through the administered questionnaire consisting of 40 items for risk management and risk perception. Statistical analysis was performed using Pearson correlation. The results unveiled a robust and significantly positive correlation, denoted by $r = 0.945^{**}$, with a p -value less than 0.001. This finding implies that students in Perlis public universities widely concurred that the risk management process is associated with their risk perception, particularly in the context of engaging in physical activities during the COVID-19 pandemic. The study offers useful insights into the practical consequences of applying the risk management method, particularly for public and private colleges that provide fitness and physical activity programs. This research offers a thorough examination of the use of risk management programs to mitigate risk perceptions among university students, particularly during physical activities.*

Keywords: *COVID-19, physical activity engagement, risk management, risk perception*

INTRODUCTION

The COVID-19 pandemic, which has reached more than 200 nations, has had a significant impact on the worldwide population, resulting in the infection of millions of people (WHO, 2020). The virus, which originated in Wuhan, China, exhibited symptoms including fever, cough, dyspnea, and exhaustion (Komurcuoglu, 2020; Giwa & Desai, 2020). Moreover, enduring COVID-19 infections may result in serious respiratory problems, pneumonia, and renal failure as potential consequences (George et al., 2020). In 2020, the rapid transmission of COVID-19 led to global panic and disruption, resulting in its classification as a Public Health Emergency of International Concern (PHEIC) in late January 2020 (Mullen, Potter, Gostin, Cicero & Nuzzo, 2020). Consequently, people around the globe had to

adapt to a "new normal," which involved adopting daily habits like wearing masks and intensifying cleanliness measures. Stringent risk management protocols were implemented to mitigate the transmission of the virus (Iavicoli, Boccuni, Buresti, Gagliardi, Persechino, Valenti & Rondinone, 2021; Gunthe & Patra, 2020). Authorities and governments took action by implementing various measures such as closing borders, imposing restrictions at airports, shutting down businesses, suspending in-person classes, imposing limits on public gatherings, and implementing travel restrictions. These measures varied slightly from one country to another (Kosack et al., 2021; Ahad et al., 2022).

Consequently, individuals spend a significant portion of their time at home, affecting their daily routines, including physical activity levels and sedentary behaviour (Abbas et.al, 2020; Zheng, Huang, Sheridan, Sit, Chen & Wong, 2020). Research conducted in the United Kingdom revealed reduced physical activity levels following the implementation of COVID-19-related social distancing measures (Jacob et al., 2020). Similarly, a study in Brazil found an increase in sedentary behaviour and a decrease in moderate to intense physical activity when such measures were in place (Feter et al., 2021). One aspect of the public's response to the pandemic that garnered significant attention was their risk perception and coping mechanisms. People tend to assess risk based on their perception of the danger they face, Komurcuoglu (2020) and the potential negative outcomes associated with it. Effective coping strategies can positively influence risk perception. Therefore, this study aimed to explore the association between perceived risk management and risk perception concerning physical activity engagement among university students, shedding light on their response to the pandemic's challenges.

LITERATURE REVIEW

Risk Management

Risk management is a vital process aimed at identifying and acknowledging potential risks to mitigate or reduce the likelihood of injuries and accidents (Anderson, Di Nota, Groll & Carleton, 2020). Service providers need to recognize and implement effective risk management practices. In the context of fitness and sports facilities, risk management processes assume even greater significance due to the broader spectrum of potential risks and exposures (Schneider, von Winning, Grüger, Anderer, Hoffner & Anderson, 2022). Raikes, Smith, Jacobson and Baldwin (2019) have previously emphasized that the proper application of risk management processes can significantly reduce the risk of legal liability, benefitting both operators and participants alike. Moreover, it serves as a motivating factor for participants in various activities. In recent times, the practice of risk management has evolved into a crucial component for event managers seeking to minimize risks, losses, and customer complaints (Rahim, Ahmed, Sarkawi, Jaaffar & Shamsuddin, 2019; Hohenstein, 2022). Prioritizing safety and risk management is imperative, as unexpected injuries can occur. Therefore, having a well-defined emergency plan, accessible emergency exits, and certified staff is paramount for facility operators (Nyaga, 2022). Safety measures in multi-purpose recreational facilities have traditionally followed an occupational health and safety (OH&S) and legal liability risk management approach, as is common in the sports industry (Ahmad et.al, 2019). International safety and risk management standards, guidelines, and codes of practice are available but remain underutilized (Ahmad et al., 2019).

However, there is a lack of knowledge regarding the actual execution of risk management and safety policies in such facilities. A study conducted by El Baz et. al, (2023) emphasized the significance of ensuring safety in facilities, specifically in relation to worker health and safety, company sustainability, and legal liability. Facility operators must prioritize safety and risk management by developing and implementing effective strategies to protect the well-being of staff and participants.

Risk Perception in Physical Activity

Risk perception is a cognitive process that is crucial in influencing individuals' behaviour when they encounter situations that may be dangerous (Rosi et al., 2021; Kim, Seo & Choi, 2022). Within the domain of health, two important frameworks, namely the Protection Motivation Theory (Rogers, 1983) and the Health Belief Model (Becker, 1974), emphasize distinct facets of risk perception. The models differentiate between perceived vulnerability, which pertains to an individual's probability of having a health condition, and perceived severity, which refers to the level of concern individuals have regarding the repercussions of that disease (Rosi et al., 2021). The emergence of the COVID-19 pandemic provided researchers with a distinct chance to investigate how individuals of various age groups perceive and evaluate risks during an actual crisis. Research has consistently demonstrated that as individuals grow older, their perception of being susceptible to COVID-19 diminishes (Vogel et al., 2021; Rosi et al., 2021). Nevertheless, elderly individuals are more likely to have a heightened perception of the mortality risk associated with COVID-19 (Wilson, Lee & Shook, 2021). According to the Health Belief Model (Becker, 1974), an individual's perception of risk can be influenced by various modifying factors, including sociodemographic variables, sociopsychological factors, knowledge, and personal experiences (Harutyunyan et al., 2023; Chisale Mabotja, Levin & Kawonga, 2021). Sociodemographic factors such as gender, educational level, employment status, marital status, and income have been found to significantly impact risk perception (Chan et al., 2020; Tran et al., 2021). Indeed, current research on COVID-19 has demonstrated that these variables predict both risk perception and individuals' engagement in preventive or protective behaviours during pandemics (Heydari et al., 2021).

Physical activity plays a crucial role in preventing and treating various noncommunicable diseases, improving mental health, enhancing quality of life, and promoting overall well-being. Despite the well-established benefits of physical activity, there has been a decline in general physical activity levels and a concurrent increase in obesity rates across Europe over the past decade (Kaminsky et al., 2022). Recognizing the significance of physical activity, the World Health Organization's latest Global Action Plan underscores the importance of fostering active societies as a strategic goal to promote physical activity. Supporting the training of fitness industry professionals, as well as other healthcare sector stakeholders, has been recommended as a policy measure to combat global physical inactivity by 2030 (Moustakas, Szumilewicz, Mayo, Thienemann & Grant, 2020).

Similarly, the World Health Organization's Regional Office for Europe suggests that governments should subsidize fitness facility memberships as a strategy to encourage physical activity, particularly among younger and more vulnerable demographic groups (Araujo, Norberto, Mantovani, Turi-Lynch, Dos Santos, Ricardo & Codogno, 2020). These statistics underscore the importance of providing high-quality and flexible fitness options in various settings and circumstances. Physical activity and a sedentary lifestyle are closely linked to obesity, making it a national health priority. Engaging in regular physical activity has been shown to protect individuals from developing obesity-related comorbidities such as type 2 diabetes, hypertension, and heart disease (Myers, Brown, Payne & Rosney, 2020). The pandemic introduced the concept of "Quarantine 15", referring to the weight gain that many individuals experienced during lockdowns. This weight gain was often attributed to increased consumption of calorie-dense and high-sugar, high-fat comfort foods. According to Nutrisystem, "sheltering in place led to a significant weight gain of up to 16 pounds for 76 per cent of Americans" (Sforzo & Moore, 2018).

In response to the pandemic, many gyms adapted their programs and operations in innovative ways to continue serving their members, while others struggled to adapt and faced the risk of closure (Doern, 2021). Fitness trainers used their downtime to complete additional classes and certifications, maximizing their skills and strategies to better assist their clients in achieving their fitness goals. This adaptability and commitment to professional development were essential for the fitness industry's survival and growth during challenging times. The perceived risk of injury during physical activity

often varies based on the type of activity (Anglo et.al, 2020). People may perceive activities like running, cycling, or weightlifting as riskier than activities such as walking or swimming. This perception can be influenced by individual characteristics, such as prior injuries, fitness levels, and overall confidence in one's physical abilities (Franklin et.al, 2020; Zanic et.al, 2020). Beyond physical injury, people may associate physical activity with potential adverse outcomes, such as overexertion, discomfort, or humiliation. These perceptions can hinder engagement in physical activity, particularly among individuals who are not accustomed to exercise.

METHODOLOGY

Study Design

This study employs a quantitative research design, utilizing surveys administered through questionnaires. The primary objective of this study is to investigate the correlation between perceived risk management practices on risk perception while performing physical activity during the COVID-19 pandemic.

Population and Sampling

This study encompassed two public universities in Perlis: Universiti Teknologi MARA (UiTM) and Universiti Malaysia Perlis, with a combined total population of 14,468 students. Data collection was carried out using online platforms. 390 questionnaires were divided equally by 195 each and were completed by students from both universities. This study implies simple random sampling by randomly selecting the students from both universities.

Instrumentation

The instrumentation for this study involved the adoption and adaptation of 20 items from Aznan et al. (2021) to assess perceived risk management and another 20 items from Kim et al. (2014) to evaluate risk perception concerning physical activity engagement. These items were organized and rated using a Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree).

FINDINGS

The percentage of respondents in this study was shown in Table 1, 390 respondents were perceived as a cross-section of the population. Table 2 illustrates the items for Risk Management which consists of 20 items. Table 3 illustrates the items for Risk Perception in Physical Activity which consists of 20 items. Table 4 indicates the strength of the relationship using the Guildford Rule of Thumb (1973). Using this rule of thumb, the researcher was able to determine the strength of the correlation between perceived risk management practice and risk perception on physical activity engagement during COVID-19.

Table 1: Percentage of Demographic Separated by University

		Frequency	Per cent
Valid	UiTM	195	50.0
	UniMaP	195	50.0
	Total	390	100.0

Table 2: Items for Risk Management

No	Item	Mean	SD
15.	The fitness facilities had provided an emergency procedure flow chart for the client/customer.	4.12	.662
16.	The fitness facilities staff/trainer/employer briefed the customer/client on possible risks for each activity/exercise.	4.07	.777
18.	The staff/trainers/employers in the fitness facilities are provided with first aid certificates.	4.07	.800
8.	The fitness facilities used all types of social media platforms for promotion purposes.	3.94	.744
4.	The fitness facilities sanitized all the equipment and each section that has been used by the customer regularly.	3.93	.700
12.	The fitness facilities take serious action towards any complaints/reports/feedback from the client/customer.	3.93	.743
1.	The fitness facility had provided the basic guidelines, rules, and regulations before entering the fitness facility.	3.92	.653
19.	The fitness facilities provided a secure locker area with CCTV for the customer/client belongings.	3.90	.867
6.	The fitness facilities provided health pre-screening services for its users.	3.89	.699
7.	The fitness facilities regularly had maintenance on the equipment and facilities provided.	3.89	.723
11.	The staff/trainers/employees in the fitness facilities can give clear instructions during any activity/exercises performed.	3.89	.738
13.	The fitness facilities had provided an interview to determine the qualified staff/trainers/employers.	3.89	.738
3.	The fitness facilities had practised good distancing between equipment and workout procedures for all activities and exercises provided	3.88	.736
2.	The fitness facilities staff/employers recorded the client's temperature and observed symptoms such as cough and sore throat as a precaution for COVID-19.	3.87	.695
10.	The staff/trainers/employers in the fitness facilities are professionally certified.	3.87	.768
14.	The fitness facilities provide a good salary and benefits to all the staff/trainers/employers.	3.87	.745
9.	The fitness facilities had given their best service quality even during the COVID-19 for the members/clients.	3.84	.767
17.	The fitness facilities provided a secure emergency area for treating any light to moderate injury.	3.83	.895
20.	The fitness facilities provided an online registration form for the new members.	3.83	.895
5	The fitness facilities' arrangement of equipment is easy to access.		

Table 3: Items for Risk Perception in Physical Activity

No	Item	Mean	SD
1.	I am aware about the new pandemic COVID-19 effects on the body health	4.12	.662
12.	I respect the integrity and property of my fellow friends, family, and the surrounding environment especially during COVID19	4.07	.800
5	COVID-19 give a huge impact on my physical activity participation	4.06	.777
11.	I take the proper precautions to avoid the spread of COVID-19	4.05	.775
2.	COVID-19 is an infectious disease that attacks the immune body system starting with the respiratory system	4.04	.870
6.	I am fully aware on the COVID-19 symptom and how it is infecting human	4.01	.777
13.	I am still engaged in physical activity with precaution steps and proper procedure to avoid COVID-19 infection	3.99	.819
18.	COVID-19 is affecting my mental and emotional status due to the restriction of outdoor and physical activity engagement	3.99	.908
9.	I know where to get the information on COVID-19 for outdoor and physical activities guidance	3.94	.804
3.	Participating in any outdoor activities is one of mechanism of how COVID-19 is spreader	3.93	.870
20.	I am fully aware that there is no cure for COVID-19 at this moment	3.92	.833

No	Item	Mean	SD
10.	I use the recommended safety equipment for all activities that I participated in (i.e., mask, hand sanitizer etc.)	3.91	.774
14.	I am avoiding my family and friends after each engagement in any physical activity during COVID 19	3.90	.883
19.	I am aware that COVID-19 chain can be broken if I follow the proposed procedure	3.90	.834
16.	COVID-19 is affecting my health status due to the restriction of physical activities engagement	3.88	.895
4.	I am an outdoor and physical activity practitioner	3.86	.859
17.	I am scared of COVID-19 infection and how it may affect people around me	3.84	.894
15.	My relationships and behaviours are affected due to COVID-19 in a manner which is unhealthy for me and for others	3.83	.867
7.	I see my physician for routine check-ups, health screenings, and disease prevention	3.81	.898
8.	I am afraid to engage in any physical activities due to COVID-19	3.76	.950

Table 4: Guildford Rule of Thumb (1973)

<i>r</i>	Strength of Relationship
<.2	Negligible Relationship
.2-.4	Low Relationship
.4-.7	Moderate Relationship
.7-.9	High Relationship
>.9	Very High Relationship

Table 5: Correlation between Risk Management and Risk Perception on Physical Activity Engagement Among UniMaP and UiTM Students

		Risk Perception
Risk Management	Pearson Correlation	-.945**
	Sig. (2-tailed)	<.001
	N	390

** . Correlation is significant at the 0.01 level (2-tailed)

The findings in Table 5 demonstrate a significant and high correlation between two variables namely perceived risk management practices and risk perception concerning physical activity engagement among students from Perlis public universities during the COVID-19 pandemic. The correlation coefficient $r = -.945^{**}$ indicates a strong and consistent relationship between these two variables. However, the negative sign indicates that as one variable increases, the other tends to decrease, and vice versa. In this context, when students perceive that risk management practices are more effective or comprehensive, their risk perception regarding physical activity engagement during the pandemic tends to decrease. To summarize, the results indicate that students' opinion of risk management procedures is inversely connected to their risk perception of physical activity involvement amid the COVID-19 epidemic. Put simply, when students believe that risk management techniques are more robust, they are more likely to see engaging in physical exercise as less risky. This highlights the impact of perceived risk management on changing students' views on safety and risk during the pandemic, underlining the significance of implementing effective risk management measures to encourage safe physical activity behaviours among university students.

DISCUSSION

The study found a negative correlation between students' perception of risk management practices and their risk perception regarding physical activity engagement during the COVID-19 pandemic. This aligns with previous research and literature on risk perception and management in the context of health and safety. A few research have investigated the complex correlation between the perception of risk and the management of risk, specifically regarding activities connected to health (Hughes et.al, 2022; Heydari et.al, 2021). Regarding the involvement in physical activity during the COVID-19 pandemic,

this negative connection indicates numerous significant observations. Prior studies have emphasized the significance of proficient risk communication in influencing individuals' perceptions of safety and risk (Heydari et.al, 2021; Renn, 2020). In a study conducted by Wang et.al (2019), it was found that perceiving risk management methods as robust and all-encompassing indicate effective communication and implementation of safety measures. Consequently, this might lead to a decrease in persons' perception of risk. A recent study conducted by Faour-Klingbeil et.al, (2021) has highlighted the significance of effective and transparent communication of risks in shaping individuals' perception of those risks.

The primary reason for this phenomenon is that individuals tend to experience a greater sense of control and confidence when they perceive that sufficient steps for managing risks have been implemented (Siegrist & Bearth, 2021). This can diminish their impression of personal risk when participating in activities. According to Chua et.al, (2021), perceived control has a substantial impact on risk perception. During the COVID-19 pandemic, students who have confidence in the implementation of safety measures are more inclined to view participation in physical activities as less hazardous (Bantham et.al, 2021). However, confidence in institutions and authorities is essential in the perception and handling of risks. When students possess faith in their institutions' risk management endeavours, they are more inclined to have confidence in the safety measures implemented. This is consistent with the findings of Kecejovic et.al (2020), who highlight the significance of trust in influencing perceptions of risk. There is evidence to suggest that there is a negative relationship between how students perceive risk management and their perception of risk. This means that students who have a strong belief in the success of risk management are more likely to follow guidelines and safety regulations (Xie et.al, 2020; Shahin & Hussien, 2020). Aligning with recommended actions might further decrease the perception of risk. This study also suggests that students from both universities possess a comprehensive comprehension of risk management when it comes to recognizing and assessing risks, particularly concerning engaging in physical activity during the pandemic. It is quite probable that the students become aware of risk management strategies through their colleges and exposure to various forms of media and campaigns. The observed inverse relationship between students' perception of risk management techniques and their risk perception regarding physical activity participation during the COVID-19 pandemic aligns with previous studies and literature on risk perception and management. This correlation offers vital insights into how individuals, namely students in the higher education setting, manage their perceptions of risk and safety during a public health crisis.

CONCLUSION

In summary, the negative connection highlights the complex relationship between how risks are perceived and how they are managed. It indicates that implementing efficient risk management strategies, such as good communication, trust-building, and adherence, can have a substantial impact on how students perceive the safety of participating in physical activities during a pandemic. These observations have tangible ramifications for educational institutions and public health authorities. To encourage safe physical activity habits among students during health emergencies such as COVID-19, it is crucial to give priority to complete risk management measures and effective communication tactics. By implementing these approaches, schools can enhance students' sense of agency, self-assurance, and belief in safety protocols, thereby diminishing their perception of danger and promoting secure participation in physical activities. Overall, the inverse relationship between how people perceive risk management and their perception of risk about physical activity during the COVID-19 pandemic is consistent with existing research. This emphasizes the significance of taking proactive measures to manage risks to protect the health and safety of students and the wider community.

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AUTHORS' CONTRIBUTION

Mohd Aznan. E. A planned the study idea and developed the framework and took the lead in writing the manuscript. Mohd Kassim. A. F, Ahmad. M. F and Edros. N. N carried out the responsibility for data collection. Zakaria, J. responsible for data analysis. All authors provided critical feedback and helped shape the research, analysis, and manuscript.

CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. We testify to the fact that all Authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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