ISSN: 2710-0723

Digital Technology's Promotion of College Sports: The Impact of Online Fitness on College Students' Behavioral Intentions

Mingming Li[1,2], Zhengyang Zhao[2]

[1] Hefei Preschool Education College, Hefei, 231131, China

[2] Anhui Polytechnic University, Wuhu, 241000, China

Abstract

Digital technology has significantly transformed the way university students participate in physical activities. In particular, the rise of fitness applications has provided university students with more convenient and diverse ways to engage in exercise. Fitness applications are not only essential tools for promoting online physical activities but also play a critical role in shaping users' behavioral intentions and exercise habits. However, existing research on how digital technology influences university students' behavioral intentions toward physical activity through online fitness remains insufficient. Based on this, the present study focuses on the role of digital technology in promoting physical activity among university students, with an emphasis on analyzing the key factors that influence behavioral intentions in the context of online fitness. These factors include perceived ease of use, perceived usefulness, perceived interactivity, and the internal relationships among these variables and behavioral intentions. The findings indicate that online fitness not only enhances university students' acceptance of fitness behaviors but also promotes their long-term participation in physical activities. This study highlights the significant theoretical and practical implications of promoting online fitness among university students and provides valuable recommendations for educators and sports managers to advance physical activity in the digital age.

Keywords

Digital Technology; Online Fitness; University Students; Behavioral Intentions.

1. Introduction

In recent years, with the rapid development of information technology and the growing popularity of healthy lifestyles, online fitness has gradually become a significant mode of physical activity(Newsome et al., 2024). With the deep integration of the Internet and mobile devices, online fitness has attracted a broad user base, particularly among university students, due to its efficiency, convenience, and high level of interactivity. According to the "55th Statistical Report on Internet Development in China" released by the China Internet Network Information Center, as of June 2024, the number of online video users (including short videos) in China had reached nearly 1.1 billion, with a significant increase in the proportion of online fitness users, making it a key focus in the field of digital health. This trend reflects the profound intersection of technology and health needs and provides new directions for the study of university students' health behaviors.

University students are at a critical stage of physical and mental development, where their health behaviors not only affect the improvement of individual quality of life but also play a significant role in enhancing the overall health level of society(Teuber et al., 2024). Supported by digital technology, the widespread application of online fitness provides university students with more flexible ways to engage in physical activities while transforming traditional sports participation modes. Studies have shown that online fitness, through diversified content and

ISSN: 2710-0723

personalized recommendation mechanisms, helps university students manage their physical health and mental stress more effectively.

Scientific and reasonable exercise has significantly improved physical and mental health (Shepherd et al., 2021). For instance, Maher et al. (2021)pointed out that Promoting physical activity among college students enhances positive mental health and provides additional health-promoting benefits, such as improved immunity. Physical activity is indispensable for weight management, as regular exercise effectively reduces body weight and fat content(Donnelly et al., 2009). This highlights that physical activity serves as a crucial intervention for promoting a healthy lifestyle. Therefore, the value of online fitness in health management for university students is becoming increasingly prominent. It not only provides students with the opportunity to exercise anytime and anywhere but also enables effective intervention in individual health behaviors through digital tools.

However, the relationship between digital lifestyles and online fitness intentions, particularly in university students' participation in physical activities, has not yet been fully explored. To fill this theoretical gap, the present study aims to investigate the relationships among digital lifestyles, perceived ease of use, perceived usefulness, interactivity, and behavioral intentions in the context of online fitness. By examining these internal connections, this study seeks to uncover the critical role of digital lifestyles in promoting fitness behaviors among university students and provide theoretical support and practical insights for promoting healthy lifestyles in the digital era.

2. Key Factors Influencing University Students' Behavioral Intentions Toward Online Fitness

2.1. Perceived Usefulness

Perceived usefulness refers to the degree to which users subjectively believe that a particular technology or service can enhance their task performance. As a core variable in the Value Adoption Model and the Technology Acceptance Model, it is widely used to explain users' adoption behaviors toward new technologies or services(Al-Adwan et al., 2023). Studies have shown that perceived usefulness is a critical driver of users' perceived value and has a significant positive impact on their behavioral intentions and actual adoption behaviors. In the context of digital fitness, the perceived usefulness of online fitness content is considered a key factor in improving user experience and perceived value. It is not only reflected in the direct support that technological functions provide toward users' goals but also in the vivid demonstration of fitness content's practical application scenarios, helping users form an intuitive perception of platform functionality. For instance, research on sports-related apps indicates that dynamically presenting information on the technical utility of fitness apps can effectively stimulate users' imagination and sense of immersion, thereby enhancing their enjoyment(Mehrab Ashrafi et al., 2024). Online fitness platforms enhance users' perception of the platform's practicality by offering personalized exercise plans, scientific guidance, and real-time feedback, thereby improving overall satisfaction and perceived value(Kim, 2022).

2.2. Perceived Ease of Use

Perceived ease of use is a critical factor influencing users' acceptance of technology, referring to the degree of convenience and low learning cost users perceive when utilizing a particular technology or service. As a key variable in the Value Adoption Model, perceived ease of use not only plays an important role in enhancing user experience but also improves users' overall evaluation of a platform by optimizing their interaction process (Abdullah et al., 2016). Studies have shown that the ease of use of a technology or content can significantly reduce users' operational burden, thereby increasing their willingness to accept the content. Specifically,

ISSN: 2710-0723

there is a significant positive relationship between perceived ease of use and users' flow experience. The ease of use of technology plays a vital role in fostering users' sense of immersion. In learning contexts, the perception of ease of use in learning materials can effectively enhance students' flow experiences(Boubker, 2024), which in turn helps improve learning efficiency and satisfaction.

This positive effect is similarly applicable to the context of online fitness, where users' perception of the ease of use of fitness content can significantly influence their evaluation of platform operations and overall value recognition.

2.3. Perceived Interactivity

The interactivity of online fitness platforms is a critical component of the user experience, as it significantly enhances users' immersion through real-time feedback and emotional engagement (Ahn et al., 2014). Interactions between users and fitness platforms not only break the limitations of time and space but also strengthen users' sense of participation and control in fitness activities. This sense of participation and control represents a key aspect of users' positive flow experience and serves as an essential driver of perceived value. Studies have shown that real-time interactivity fosters connections between users and platforms or content, inducing a temporary state of detachment from reality and allowing users to focus more deeply on their fitness activities. For instance, real-time interactivity, such as virtual guidance or timely feedback from fitness coaches, can provide personalized suggestions to help users achieve their fitness goals more efficiently(Wang, 2024).

In addition, interactivity can enhance users' social connections through community features and platform activities, providing users with greater support and motivation during their fitness journey. By promptly responding to users' needs and dynamically adjusting content, interactivity further elevates users' sense of control and satisfaction.

3. Strategies for Enhancing University Students' Participation in Online Sports Activities

3.1. Enhancing User Experience and Perceived Value of Online Fitness

The user experience and perceived value of online fitness are critical factors influencing users' behavioral intentions. To improve users' overall evaluation of the platform, optimizations should be made in three core dimensions: perceived usefulness, perceived ease of use, and perceived interactivity.

Perceived usefulness is a key variable affecting users' behavioral intentions. Fitness platforms should provide personalized exercise plans, scientific fitness guidance, and real-time feedback functions, enabling users to clearly perceive how the platform can effectively help them achieve their fitness goals. Additionally, by showcasing real-life examples and data-such as success stories or health improvement outcomes-platforms can strengthen users' recognition of their functional value, thereby enhancing the platform's appeal and credibility. (Hu et al., 2017).

Perceived ease of use determines the operational burden and acceptance level of users when utilizing fitness platforms. Optimizing user interface design, simplifying operational processes, and providing detailed operation guides or video tutorials can significantly reduce users' learning costs and enhance their operational experience(Lun et al., 2024). Furthermore, ensuring multi-device compatibility-such as smartphones, tablets, and computers-can further improve the platform's convenience and increase user satisfaction.

Perceived interactivity significantly influences users' sense of participation and immersion, making it a core element in enhancing platform user experience. Fitness platforms can develop real-time interactive features, such as live-streamed fitness classes and virtual coaching, to provide users with personalized feedback, thereby improving their fitness outcomes and

ISSN: 2710-0723

focus(Fernando et al., 2024). Additionally, leveraging community features-such as discussion forums, team challenges, and leaderboards-can strengthen emotional connections and social interactions among users, further motivating and encouraging them to participate in fitness activities (Liu et al., 2024).

By comprehensively enhancing perceived usefulness, perceived ease of use, and perceived interactivity, fitness applications can optimize user experience and increase users' perceived value of the platform. This not only helps improve university students' acceptance of online sports activities but also promotes their long-term willingness to use fitness platforms, providing strong support for the development of digital fitness models.

3.2. Emphasizing Mental Health and Emotional Motivation

In promoting university students' participation in online sports activities, mental health support and emotional motivation are core elements that cannot be overlooked. Physical activity is not only an effective approach to improving physical health but also plays a crucial role in enhancing mental well-being and fostering emotional connections. Online fitness platforms can integrate motivational mechanisms and psychological support features to stimulate students' intrinsic motivation and enhance their participation experience. For instance, platforms can implement reward systems based on behavioral achievements, offering incentives such as points, certificates, or other forms of recognition to increase students' sense of accomplishment while also providing additional value for their future career development(Fang et al., 2019). Furthermore, team-based fitness models and community features can encourage emotional interactions among students, creating a positive and supportive exercise environment. By setting collective goals or organizing team competitions, students can gain support and a sense of belonging through collaborative efforts and healthy competition.

At the same time, integrating mental health support into fitness content represents an important direction for enhancing student participation. Platforms can introduce meditation and stress-relief courses to help students alleviate academic pressures and improve psychological resilience. Additionally, regular mental health assessments and the delivery of encouraging content can promote students' holistic development. Overall, mental health support and emotional motivation not only enhance students' sustained engagement in online fitness activities but also contribute to the long-term sustainability of fitness platforms within the university student population.

3.3. Integration into University Physical Education and Diversified Promotion Strategies

Universities serve as the primary venues for college students to engage in physical activities, and integrating online fitness into the university physical education system is a key approach to enhancing student participation(Webster et al., 2021). On the one hand, universities should utilize online courses and interactive activities to guide students in experiencing the convenience and effectiveness of online fitness. For example, online fitness services can be incorporated as part of physical education courses, with incentives such as credit rewards or course assessment mechanisms to motivate student participation. On the other hand, organizing collective activities such as online sports competitions and team fitness challenges can further stimulate students' enthusiasm for participation and foster a strong fitness culture on campus.

In addition, college students have highly diverse needs and preferences for physical activities. When promoting online fitness, it is essential to consider these characteristics by designing diversified fitness courses and service formats and offering options such as strength training, dance, yoga, and other forms of exercise to meet the interests and fitness levels of different

ISSN: 2710-0723

students. At the same time, universities should actively adopt personalized fitness recommendation systems, creating tailored fitness plans based on students' physical conditions and exercise goals. This approach enhances the relevance and effectiveness of promotional efforts.

3.4. Strengthening Policy Support and Resource Assurance

Policy and resource support are fundamental guarantees for the promotion of online sports activities. Universities and relevant education management departments should develop targeted policies to provide students with free or discounted access to fitness applications, thereby lowering participation barriers. At the same time, it is essential to ensure adequate hardware and network support, such as offering fitness equipment rental services or improving campus wireless network coverage, to help students overcome resource-related obstacles.

Governments and universities can also enhance collaborations with fitness platforms or technology enterprises to improve the quality and accessibility of online fitness services through joint promotion campaigns or special funding programs. For instance, introducing high-quality online fitness content or live-streamed courses, as well as providing students with training and technical guidance, can enable them to use platform functions more effectively. Continuous policy support and optimized resource allocation will significantly increase university students' acceptance of and long-term engagement in online sports activities.

4. Conclusion and Implications

This study examined the impact of digital technology, particularly online fitness, on university students' behavioral intentions toward physical activity. By analyzing the relationships among perceived ease of use, perceived usefulness, perceived interactivity, and behavioral intentions, the findings highlight the significant role of digital technology in fostering university students' participation in physical activities. The results demonstrate that digital technology enhances the perceived value and user experience of online fitness, thereby improving students' acceptance of online fitness and encouraging their sustained participation in physical activities. Moreover, the increasing prevalence of digital lifestyles not only serves as a foundation for university students' engagement in online fitness but also acts as a key driver for the digital transformation of healthy lifestyles.

This study underscores the potential of digital technology in transforming the way university students engage in sports activities, offering both theoretical and practical contributions. For theoretical implications, the study provides insights into the mechanisms by which perceived value influences behavioral intentions, particularly in the context of online fitness. From a practical perspective, the findings offer guidance for educators and sports managers in designing and promoting online fitness activities. Enhancing the perceived value and user experience of digital fitness platforms can effectively boost student participation and foster long-term engagement. Furthermore, this study lays the groundwork for future research exploring the intersection of digital technology and physical activity, particularly in addressing the diverse needs and preferences of university students and promoting a healthier digital lifestyle.

5. Limitations

This study has several limitations. First, it primarily focuses on the digital lifestyles of university students, a specific demographic whose behavioral characteristics and usage patterns of fitness applications may not fully represent those of other age groups or social populations. Groups with different ages, professions, or cultural backgrounds may exhibit distinct digital lifestyles, which could influence the relationships among the variables. Second, this study centers on

ISSN: 2710-0723

theoretical analysis and lacks extensive empirical data, which may limit the generalizability of some conclusions in practical applications. Furthermore, the research mainly relies on key theoretical constructs such as perceived ease of use, perceived usefulness, and behavioral intentions, without incorporating other potential factors that may influence the behavioral intentions of fitness app users, such as social influence, technological support, or individual health awareness. This may, to some extent, limit the comprehensiveness of the study.

Future research could validate the theoretical model in different populations and cultural contexts while exploring the independent effects of various digital lifestyle dimensions—such as leisure preferences, fashion consciousness, and internet dependency—on behavioral intentions. This would provide a better understanding of the segmented market and behavioral patterns of fitness application users, thereby contributing to the broader promotion of online physical activities.

References

[1] Abdullah, F., Ward, R., & Ahmed, E. (2016). Investigating the influence of the most commonly used external variables of TAM on students' Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) of e-portfolios. Computers in Human Behavior, 63, 75-90. https://doi.org/10.1016/j.chb.2016.05.014.

[2] Ahn, T., Hong, M., & Pedersen, P. M. (2014). Effects of perceived interactivity and web organization on user attitudes. European Sport Management Quarterly, 14(2), 111-128. https://doi.org/10.1080/16184742.2014.880496.

[3] Al-Adwan, A. S., Li, N., Al-Adwan, A., Abbasi, G. A., Albelbisi, N. A., & Habibi, A. (2023). "Extending the Technology Acceptance Model (TAM) to Predict University Students' Intentions to Use Metaverse-Based Learning Platforms". Education and Information Technologies, 28(11), 15381-15413. https://doi.org/10.1007/s10639-023-11816-3.

[4] Boubker, O. (2024). From chatting to self-educating: Can AI tools boost student learning outcomes? Expert Systems with Applications, 238, 121820. https://doi.org/https://doi.org/10.1016/j.eswa.2023.121820.

[5] Donnelly, J. E., Blair, S. N., Jakicic, J. M., Manore, M. M., Rankin, J. W., & Smith, B. K. (2009). American College of Sports Medicine Position Stand. Appropriate physical activity intervention strategies for weight loss and prevention of weight regain for adults. Medicine and science in sports and exercise, 41(2), 459-471.

[6] Fang, Y., Ma, Y., Mo, D., Zhang, S., Xiang, M., & Zhang, Z. (2019). Methodology of an exercise intervention program using social incentives and gamification for obese children. BMC Public Health, 19(1), 686. https://doi.org/10.1186/s12889-019-6992-x.

[7] Fernando, P., Schneider, J., Daniele, Jivet, I., & Drachsler, H. (2024). Beyond hard workout: A multimodal framework for personalised running training with immersive technologies. British Journal of Educational Technology, 55(4), 1528-1559. https://doi.org/10.1111/bjet.13445.

[8] Hu, M., Zhang, M., & Wang, Y. (2017). Why do audiences choose to keep watching on live video streaming platforms? An explanation of dual identification framework. Computers in Human Behavior, 75, 594-606. https://doi.org/https://doi.org/10.1016/j.chb.2017.06.006.

[9] Kim, M. (2022). How can I Be as attractive as a Fitness YouTuber in the era of COVID-19? The impact of digital attributes on flow experience, satisfaction, and behavioral intention. Journal of Retailing and Consumer Services, 64, 102778. https://doi.org/10.1016/j.jretconser.2021.102778.

[10] Liu, Z., Zhang, Y., Zhang, J., & Song, X. (2024). Run for the group: Examining the effects of group-level social interaction features of fitness apps on exercise participation. Decision Support Systems, 187, 114335. https://doi.org/https://doi.org/10.1016/j.dss.2024.114335.

[11] Lun, L., Zetian, D., Hoe, T. W., Juan, X., Jiaxin, D., & Fulai, W. (2024). Factors Influencing User Intentions on Interactive Websites: Insights From the Technology Acceptance Model. IEEE Access, 12, 122735-122756. https://doi.org/10.1109/ACCESS.2024.3437418.

ISSN: 2710-0723

[12] Maher, J. P., Hevel, D. J., Reifsteck, E. J., & Drollette, E. S. (2021). Physical activity is positively associated with college students' positive affect regardless of stressful life events during the COVID-19 pandemic. Psychology of Sport and Exercise, 52, 101826. https://doi.org/https://doi.org/10.1016/j.psychsport.2020.101826.

[13] Mehrab Ashrafi, D., Mone, F. H., Zabeen, M., Sarker, M. A. R., & Shahid, T. (2024). What Drives Users to Recommend Mobile Fitness Apps? A Three-Stage Analysis Using PLS-SEM, Machine Learning, and fsQCA. International Journal of Human–Computer Interaction, 1-31. https://doi.org/10.1080/10447318.2024.2434962.

[14] Newsome, A. N. M., Reed, R., Sansone, J., Batrakoulis, A., McAvoy, C., & W. Parrott, M. (2024). 2024 ACSM Worldwide Fitness Trends: Future Directions of the Health and Fitness Industry. ACSM's Health & Fitness Journal, 28(1). https://journals.lww.com/acsm-healthfitness/fulltext/2024/01000/2024_acsm_worldwide_fitness_trends__future.7.aspx.

[15] Shepherd, H. A., Evans, T., Gupta, S., McDonough, M. H., Doyle-Baker, P., Belton, K. L., Karmali, S., Pawer, S., Hadly, G., Pike, I., Adams, S. A., Babul, S., Yeates, K. O., Kopala-Sibley, D. C., Schneider, K. J., Cowle, S., Fuselli, P., Emery, C. A., & Black, A. M. (2021). The Impact of COVID-19 on High School Student-Athlete Experiences with Physical Activity, Mental Health, and Social Connection. International Journal of Environmental Research and Public Health, 18(7), 3515. https://doi.org/10.3390/ijerph18073515.

[16] Teuber, M., Leyhr, D., & Sudeck, G. (2024). Physical activity improves stress load, recovery, and academic performance-related parameters among university students: a longitudinal study on daily level. BMC Public Health, 24(1). https://doi.org/10.1186/s12889-024-18082-z.

[17] Wang, Z. (2024). Artificial intelligence in dance education: Using immersive technologies for teaching dance skills. Technology in Society, 77, 102579. https://doi.org/https://doi.org/10.1016/j.techsoc.2024.102579.

[18] Webster, C. A., D'Agostino, E., Urtel, M., McMullen, J., Culp, B., Egan Loiacono, C. A., & Killian, C. (2021). Physical Education in the COVID Era: Considerations for Online Program Delivery Using the Comprehensive School Physical Activity Program Framework. Journal of Teaching in Physical Education, 40(2), 327-336. https://doi.org/10.1123/jtpe.2020-0182.