



The Impact of Online Fitness on Physical Activity Levels and Health Among Sedentary Office Workers: A Case Study of the Liu Genghong Phenomenon

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ABSTRACT

Against the backdrop of the "Healthy China 2030" strategy and the digital transformation of national fitness, online fitness, grounded in the Technology Acceptance Model and Health Belief Theory, has transcended the spatial and temporal constraints of traditional exercise. For sedentary office workers, its low-threshold, high-flexibility nature helps reduce perceived barriers to physical activity and facilitates regular exercise during fragmented time, thereby effectively improving sedentary behavior patterns. This has practical significance for promoting the health of occupational populations and advancing the early prevention and control of chronic diseases. However, existing research has largely focused on the short-term intervention effects of online fitness, with limited exploration of long-term behavioral adherence. In this context, online fitness represented by Liu Genghong has developed rapidly, offering a new exercise option for sedentary office workers. Through case analysis and textual analysis, this study reveals the facilitative mechanisms and structural limitations of online fitness and proposes a "digital-embodied collaborative intervention model," providing theoretical references for the precise implementation of the national digital fitness strategy.

1. Research Background

In the context of accelerated urbanization and evolving work patterns, sedentary office work has become the norm for today's office workers. Extended periods of uninterrupted sitting exceeding eight hours, prolonged commuting times, and mental fatigue induced by cognitive labor collectively constitute a "sedentary mode of existence." This lifestyle not only contributes to a rising

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prevalence of cervical and lumbar spine disorders but also forms an insidious causal chain linking metabolic syndromes, cardiovascular risks, and even mental health issues. The "Healthy China 2030" strategy has elevated population health to a national priority, explicitly emphasizing a shift from "treatment-centered" to "people's health-centered" approaches, and promoting the deep integration of nationwide fitness with public health. However, for sedentary individuals entrenched in demanding work environments, traditional fitness models present significant disadvantages—the distance to gyms after work, conflicts between fixed class schedules and overtime commitments—often rendering exercise itself an additional source of stress.

It is against this backdrop that online fitness has experienced explosive growth over the past several years. From recorded follow-along workouts to live interactive sessions, and from exercise-based social networking to virtual coaching, digital technologies have sought to deconstruct and reconfigure fitness scenarios, embedding them into the fragmented interstices of individual daily life. Rather than requiring individuals to "set aside time specifically for exercise," online fitness endeavors to allow physical activity to "quietly return to everyday life." Among such initiatives, Liu Genghong's online fitness livestreams represent a quintessential case study. This case first gained prominence in 2022, rapidly rising to popularity during the COVID-19 pandemic lockdowns. Featuring high-frequency, low-threshold, and highly interactive content—most notably the "Compendium of Materia Medica" shuttlecock kick exercise—it attracted tens of millions of users, predominantly sedentary office workers. Its key characteristics include: high-frequency livestreams (5–6 sessions per week) that facilitate the formation of regular exercise habits; low-difficulty movement design that directly addresses pain points such as time constraints, limited space, and lack of exercise experience; strong interactivity that fosters a sense of "accompanied" fitness; and the influence of a celebrity IP, which reduces user concerns regarding content quality. The long-term evolution of this case—from its explosive growth phase in 2022 to its normalized phase by 2025—provides a natural longitudinal framework for observing behavioral maintenance and attenuation, rendering it an ideal anchor point for investigating the health impacts of online fitness on sedentary office workers. The central question guiding this study is: how does the emergence of this model contribute to the physical activity levels and overall health of sedentary office workers?

2. Research Purpose and Significance

Online fitness has demonstrated strong user engagement and communication effects in the short term; however, the mechanisms through which it impacts physical activity levels and health among sedentary office workers remain unclear. Existing research has largely focused on user behavior analysis or platform communication strategies, with a lack of theoretical evaluation of health outcomes. Particularly within the Chinese context, systematic investigation is still needed to understand how online fitness responds to the strategic goals of "Healthy China 2030" and how it can synergize with the digitalization of national fitness policies.

Moreover, current theoretical research exhibits a notable tendency toward "emphasizing adoption while neglecting maintenance." A substantial body of literature employs the Technology Acceptance Model as a core framework to explain why users "initiate" the use of online fitness, yet fails to provide comparable depth in exploring why users "discontinue" or "persist in" its use. Although the Health Belief Theory encompasses constructs relevant to behavioral maintenance, such as self-efficacy and perceived barriers, its application within online fitness research remains insufficient.

Through an in-depth case analysis, this study aims to elucidate both the facilitative mechanisms and structural limitations of online fitness in affecting the health of sedentary office workers, with a particular focus on the complete trajectory from behavioral adoption to long-term maintenance. The findings are intended to offer theoretical references and practical insights for the precise implementation of the national digital fitness strategy.

3. Literature Review

3.1 Foundational Research on Online Fitness and Health Promotion

As an interdisciplinary field intersecting digital technology and health promotion, online fitness is theoretically grounded primarily in the Technology Acceptance Model and the Health Belief Theory. Davis's (1989) Technology Acceptance Model emphasizes the determining role of perceived ease of use and perceived usefulness in technology adoption behavior, providing a theoretical framework for understanding why users "commence" using online fitness. Rosenstock's (1974) Health Belief Theory explains the initiation and maintenance of health behaviors across dimensions such as health risk perception, self-efficacy, and perceived barriers. With respect to promoting health among sedentary populations, somatosensory exercise games lower the barriers to exercise participation through their engaging and private nature, making sedentary individuals more willing to engage in home-based physical activity, thereby reducing sedentary time and improving physical fitness. Nevertheless, existing somatosensory exercise games continue to face practical limitations, including a lack of accurate movement instruction and the inability to provide personalized training intensity.

3.2 Health Intervention Research for Sedentary Office Workers

Health interventions targeting sedentary office workers represent a significant issue in the field of public health. Owen et al. (2010) systematically articulated the mechanisms linking sedentary behavior to chronic diseases, emphasizing that interrupting sedentary time and increasing physical activity are key pathways to health promotion. In the context of workplace interventions, multicomponent intervention measures incorporating digital elements have been shown to effectively reduce sedentary behavior among office workers. A systematic review and meta-analysis encompassing 19 studies revealed that interventions employing digital elements such as information push notifications, organizational support, and social influence reduced sitting time by 29.9 minutes per workday (95% CI: -45.2, -14.5). As an important form of digital intervention, online fitness, characterized by its low threshold and high accessibility, is particularly well-suited for sedentary office workers.

3.3 Research on the Liu Genghong Phenomenon and Online Fitness Communication

Liu Genghong's fitness livestreams represent the most emblematic phenomenon of the recent nationwide "cloud fitness" movement. From the perspective of creative communication, the success of the Liu Genghong phenomenon can be attributed to the effective synergy between content innovation and communication strategies. Drawing on interaction ritual chain theory, research indicates that Liu Genghong's fitness livestreams construct interaction rituals within virtual spaces through high-frequency interaction, emotional energy transmission, and a shared focal point, thereby enhancing user engagement and identity formation. From the perspective of body discipline theory, micro-power dynamics within fitness livestream platforms exhibit a fluid state, with users facing risks of self-objectification amid the complexity of "bodily presence" and "bodily absence."

3.4 Research on Facilitative Mechanisms and Structural Limitations of Online Fitness

Regarding facilitative mechanisms, research grounded in social cognitive theory has confirmed that observing others' fitness experiences on social networking platforms can elevate observers' own physical activity levels through the mediating role of exercise self-efficacy. In terms of structural limitations, phenomenological theories of the body (Merleau-Ponty, 1945) provide a philosophical foundation for understanding the problem of "bodily absence" in digital fitness. Existing studies point out that somatosensory exercise games still encounter practical challenges in promoting the health of sedentary populations, such as the absence of precise movement guidance and the impossibility of customizing training intensity. In the application of uses and gratifications theory, research on synchronous online exercise courses has confirmed that hedonic motives, identification motives, and integration motives exert significantly positive effects on exercise satisfaction, whereas social inhibition has a significantly negative effect on satisfaction.

4. Research Subjects and Methods

4.1 Research Subjects

This study takes Liu Genghong's online fitness livestreams as its research subject. The scope of investigation includes public user discussions related to "Liu Genghong," "home-based fitness," and "Compendium of Materia Medica Shuttlecock Kick Exercise" across platforms such as Douyin, Weibo, and Xiaohongshu, as well as relevant reports from authoritative media outlets including Xinhua Net and People's Daily Online. The analysis focuses on the mechanisms through which this phenomenon influences physical activity levels and health outcomes among sedentary office workers.

Based on the above research subjects, this study proposes the following four core research questions:

- (1) How does online fitness affect the physical activity levels of sedentary office workers?
- (2) What specific effects does online fitness have on the physical health and mental health of this population?
- (3) What facilitative mechanisms and structural limitations characterize the online fitness model represented by Liu Genghong?
- (4) How can online fitness intervention strategies be optimized to better serve the national digital fitness strategy?

4.2 Research Methods

Literature Review Method: Relevant literature on online fitness, sedentary behavior, and health promotion was retrieved from databases including CNKI (China National Knowledge Infrastructure) and Web of Science, providing theoretical and policy support for this study.

Case Study Method: Taking Liu Genghong's online fitness livestreams as a typical case, this study systematically delineates its core characteristics and analyzes its mechanisms of influence on the physical and mental health of sedentary office workers.

Textual Analysis Method: Publicly available posts and comments (approximately 2,000 items) from Weibo, Xiaohongshu, and Douyin platforms, spanning from April 2022 to March 2025, were collected. Thematic analysis and sentiment orientation analysis were employed to identify

facilitative mechanisms and structural limitations.

Logical Analysis Method: Through induction, deduction, and synthesis, the research findings were subjected to theoretical dialogue, and optimization strategies were logically derived.

5. Research Content

5.1 Communication Mechanisms of the Liu Genghong Phenomenon

The meteoric rise of Liu Genghong's fitness livestreams was not accidental but rather the result of the synergistic interplay of multiple communication mechanisms. First, the platform algorithm-driven promotion mechanism. The decentralised recommendation algorithm of the Douyin platform enabled high-quality content to rapidly reach potential users, with a large number of repurposed clips of Liu Genghong's livestreams being disseminated, leading to viral diffusion. Second, the social chain fission mechanism. Users shared their workout check-ins via WeChat Moments and WeChat groups, fostering mutual encouragement and accountability within their social circles, thereby reducing the psychological costs associated with individual persistence. Third, the media agenda-setting mechanism. Coverage by mainstream media of "Liu Genghong Girls" and the "Compendium of Materia Medica Shuttlecock Kick Exercise" framed the phenomenon as a symbolic event representing national fitness, further amplifying its social influence.

5.2 Facilitative Mechanisms of Liu Genghong's Online Fitness

Drawing on Social Cognitive Theory and Uses and Gratifications Theory, three primary categories of facilitative mechanisms can be identified within Liu Genghong's online fitness model. First, the observational learning mechanism. The clear movement demonstrations, step-by-step instructional breakdowns, and repetitive practice sequences in Liu Genghong's livestreams enable users to acquire motor skills through observation and imitation, thereby lowering the learning threshold for those without prior exercise experience. Second, the self-efficacy mechanism. Through positive encouragement ("You're doing great"), progressively structured difficulty levels, and immediate feedback following movement completion, users accumulate a sense of achievement, thereby enhancing their confidence to continue participation. Third, the uses and gratifications mechanism. Different users derive satisfaction based on distinct needs: functional needs (easing neck, shoulder, and lower back discomfort), emotional needs (stress relief, mood elevation), and social needs (check-in posting, interaction in comment sections). The differentiated satisfaction of multiple needs enables online fitness to attract a broad user base.

5.3 Structural Limitations of Liu Genghong's Online Fitness

Despite the considerable success of Liu Genghong's online fitness, its structural limitations remain pronounced. First, the predicament of bodily absence. In offline fitness, real-time movement correction by instructors, tactile feedback from physical contact, and the presence of peers for supervision collectively constitute a complete embodied perceptual experience. In contrast, online fitness compresses physical activity into a visual following behaviour, leaving users without immediate feedback regarding movement accuracy. Users commonly report, "I don't know if my form is correct" and "Since no one corrects me, I might be doing the moves wrong without realising it." This bodily absence directly undermines the standardisation of exercise form and elevates the risk of injury.

Second, the difficulty of behavioural maintenance. User enthusiasm exhibits a pattern of high

initial engagement followed by gradual decline. While users participate actively in the early stages due to novelty and social buzz, the frequency of follow-along sessions tends to decrease over time in the absence of external supervision and sustained intrinsic motivation. Users report, "I was really enthusiastic at first, but after a month I became lazy" and "Once the novelty wore off, I didn't feel like doing it anymore," revealing the limitations of digital incentives during the behavioural maintenance phase.

Third, individual differences in adaptability. The health outcomes of online fitness vary significantly according to factors such as age, baseline fitness level, and prior exercise experience. Users with an existing exercise foundation adapt well, whereas those without such a foundation report, "After a month of following along, I feel even more tired" and "Others seem to get results, but why don't I feel any different?" Current online fitness models lack personalised stratification and risk assessment mechanisms, making it difficult to accommodate the diverse needs of different users.

Fourth, insufficient platform support. Existing online fitness platforms predominantly provide standardised follow-along content, lacking functional modules such as movement recognition, real-time feedback, and exercise risk assessment. Users' incorrect movements cannot be detected or corrected in a timely manner, and there are no warning mechanisms for excessive follow-along training. This constitutes a significant and non-negligible contributor to injury risk.

5.4 Current State Survey

This study conducted thematic analysis and sentiment orientation analysis on the collected 2,000 social media text samples (of which approximately 68% of users explicitly identified themselves as sedentary office workers). The results are presented in Table 1.

Table 1: Statistical Analysis of Online Fitness User Feedback (N=2000)

Feedback Category	concrete content	Frequency of mention	proportion
Increased level of physical activity	Increased training frequency and prolonged duration of follow-training sessions	1246	62.3%
Alleviation of sedentary symptoms	Comfortable neck and shoulder, relaxed lower back	987	49.4%
Improvement in mood	Decompression, happiness, stress relief	1152	57.6%
History of sports injury	Knee pain, lumbar muscle strain, plantar fasciitis	428	21.4%
Provide feedback on difficulties	Decreased enthusiasm, difficulty in sustaining	856	21.4%
Concerns about the standardization of operational	I don't know if it's right; no one corrected	763	38.2%

Data source: The same user may mention multiple items, resulting in a total proportion exceeding 100%. Data source: Statistical analysis of publicly posted content on Weibo, Xiaohongshu, and TikTok platforms (April 2022 – March 2025) by the author.

As shown in Table 1, online fitness demonstrates significant effectiveness in enhancing physical activity levels, alleviating sedentary symptoms, and improving emotional well-being. However, more than one-fifth of users have reported exercise-related injuries, over forty percent experience difficulties in maintaining adherence, and nearly forty percent express concerns regarding movement correctness. These findings indicate that the health-promoting effects of online fitness entail a dual-edged nature, and its structural limitations warrant due attention.

6. Results and Recommendations

6.1 Identified Problems

Based on the aforementioned current state survey and case analysis, this study identifies four primary problems inherent in current online fitness models:

Problem 1: Low behavioral maintenance rates and severe user attrition. Although online fitness can effectively trigger exercise behavior, over forty percent of users experience a decline in frequency or complete cessation of participation after one month. The lack of external supervision and real-time feedback constitutes the core underlying cause.

Problem 2: Lack of movement correctness and high risk of exercise-related injury. A total of 21.4% of users have reported injury experiences, with injuries often directly associated with improper movement execution. Online fitness lacks real-time movement correction functions, rendering the issue of "bodily absence" particularly pronounced.

Problem 3: Insufficient individual adaptability and unmet differentiated needs. Standardized content fails to accommodate the diverse requirements of users varying in age, physical fitness level, and prior exercise experience, leading some users to feel either "unable to keep up" or that the exercise is "ineffective."

Problem 4: Incomplete platform support mechanisms and absence of safety safeguards. Existing platforms prioritize content production and user growth, lacking complementary functions such as exercise risk assessment, personalized recommendations, and health record management.

6.2 Recommendations

In response to the above problems, this study proposes the following four recommendations, each corresponding to a specific problem:

Recommendation 1 (Addressing Problem 1: Low behavioral maintenance rates): It is recommended that platforms establish a dual-track mechanism combining "digital empowerment and social incentives." On the one hand, users' intrinsic motivation should be enhanced through features such as check-in recording, behavioral tracking, and progressive rewards. On the other hand, a hybrid model integrating online communities with light-intensity offline activities—such as city-based follow-along groups and corporate wellness competitions—should be developed to compensate for the limitations of digital supervision through social support.

Recommendation 2 (Addressing Problem 2: Lack of movement correctness): It is

recommended that platforms integrate movement recognition and real-time feedback technologies. User movement postures should be monitored via cameras or wearable devices, with corrective prompts provided when errors are detected. Mandatory guidance for warm-up and cool-down stretching should be added, along with graded alerts for exercise intensity. These technical measures can partially "recall" the experience of bodily presence.

Recommendation 3 (Addressing Problem 3: Insufficient individual adaptability): It is recommended that a tiered and categorized course system be developed, distinguishing among beginner, intermediate, and rehabilitation-oriented versions. User health profiles and exercise risk assessment mechanisms should be established. Course difficulty should be dynamically matched to users' physical data—including age, fitness test results, and prior injury history—thereby enabling personalized recommendations.

Recommendation 4 (Addressing Problem 4: Incomplete platform support): It is recommended that online fitness be integrated into the public service system for national fitness, with government and platforms jointly developing tiered certification standards and safety protocols. Platforms should assume primary responsibility for health promotion by establishing exercise injury warning systems and emergency guidance functions. At the policy level, a multi-stakeholder health promotion network involving government, platforms, communities, and users should be fostered.

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