

A Review on Exercise Addiction in Mainland China

Tang Catherine So Kum^{1*}; Lui Wai Kin²

¹Department of Counselling & Psychology, Hong Kong Shue Yan University, Hong Kong, China.

²Bachelor of Social Sciences in Psychology, Department of Counselling & Psychology, Hong Kong Shue Yan University, Hong Kong, China.

Abstract

The booming health and fitness industry in mainland China represents a positive shift towards greater health consciousness. While regular exercise is beneficial, over-exercising can lead to significant physical and mental health issues. Public health initiatives must strike a balance between promoting the benefits of exercise and raising awareness about the risks of exercise addiction, which is characterized by excessive and uncontrollable exercise habits. This review will delve into the socio-economic and cultural factors contributing to exercise addiction in mainland China. Additionally, it will discuss the prevalence, risk factors, and current public health strategies for prevention and intervention.

Introduction

The booming health and fitness industry, with its revenue skyrocketing from USD 1.45 billion to USD 6.12 billion in 2024, and projected to reach USD 9.37 billion by 2029, reflects a growing global interest in health and fitness. This surge is driven by a heightened awareness of the benefits of maintaining a healthy lifestyle, which includes regular exercise, balanced nutrition, and mental well-being. The United States, China, and the United Kingdom occupy the top three positions in terms of revenue generation in this industry [1], showcasing their significant investment in promoting a health-conscious culture. This trend signifies a positive shift towards health consciousness, illustrating society's collective movement towards prioritizing physical and mental health. Regular exercise has been shown to offer numerous health benefits [2], including improved cardiovascular health, enhanced mental well-being, and overall physical fitness. It reduces the risk of chronic diseases, boosts mood and energy levels, and contributes to a better quality of life. However, it is important to recognize that this trend also has important public health implications. While exercise is beneficial, it is crucial to distinguish between healthy exercise and exercise addiction, a condition characterized by excessive and uncontrollable exercise habits [3].

*Corresponding author: Tang Catherine So Kum

Department of Counselling & Psychology, Hong Kong Shue Yan University, Hong Kong, China.

Email: sktang@hksyu.edu

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This review will focus on exercise addiction in mainland China, exploring its prevalence, risk factors, and sociocultural influences. Understanding the condition's prevalence and impact on the population will contribute to more effective strategies to address this emerging public health concern.

Exercise addiction

Exercise addiction refers to excessive exercise characterized by six common components of addiction: salience, mood modification, tolerance, withdrawal, personal conflict, and relapse [3]. While regular exercise is generally a healthy activity, exercise addiction involves performing excessive amounts of exercise to the detriment of physical health, spending excessive time exercising that negatively affects personal and professional life, and continuing to exercise despite physical injuries. Additionally, exercise addiction entails a dependence on rigid exercise regimes, with severe withdrawal symptoms occurring when unable to exercise. Individuals at higher risk of exercise addiction tend to be more depressed and anxious compared to those at lower risk. Moreover, exercise addiction frequently co-occurs with eating disorders, body image disorders, and obsessive-compulsive disorder.

Exercise addiction has not been listed as a clinical mental health disorder. It can be further classified as primary or secondary based on the purpose of excessive exercise. Primary exercise addiction involves obtaining positive affect and/or reducing negative affect directly from exercise. In contrast, secondary exercise addiction involves using exercise as an instrument to achieve gratification in other aspects such as body weight management [3]. Exercise addiction is often comorbid with body image-related disorders like eating disorders and body dysmorphia [3]; thus, some researchers consider it as a feature of these disorders rather than a standalone condition. Prevalence estimates of exercise addiction vary significantly, likely due to differences in assessment measures and sample populations. In mainland China, estimated prevalence rates of exercise addiction range from 4.9% to 7.7% among college students and adults [3,5], and from 7.7% to 18.2% among students and adults who regularly exercise [5]. These rates are consistent with findings from Western samples [3]. For example, in the United States, prevalence rates of exercise addiction range from 3% to 9% among regular exercisers, 7.1% among football players, and 9.7% among fitness club members [4].

The literature on exercise addiction among mainland Chinese samples has documented various risk factors and outcomes. These include gender, exercise frequency, body image concerns, and psychological traits. The relationships between exercise addiction and other mental health issues such as internet addiction and eating disorders have also been explored. Additionally, sociocultural impact and variations have also been observed. Caution should be taken when interpreting these findings, as the majority of studies are cross-sectional and involve only youth, exercisers, and mixed samples.

Shao et al. proposed that being male and exercise frequency, but not duration, predict exercise addiction [5]. In contrast, Yang et al. suggested that exercise frequency, duration, and eating disorder symptoms are predictors, based on a sample of 1,447 habitual exercisers [6]. Li identified concerns about exercise abilities, physical appearance, and competence needs as risk factors among 1,601 college students who exercise regularly [8]. In addition, Li et al. [9] and Wu et al. [10] conducted studies with 403 and 208 exercisers, respectively, and observed that low levels of mindfulness and cognitive state anxiety contribute to exercise addiction. Obsessive passion and self-criticism were also identified as risk factors in these studies. Yang et al. highlighted that conscientiousness and neuroticism are risk factors among 342 Chinese females [11]. Furthermore, Li, Nie, and Ren revealed that exercise addiction can lead to state anxiety, depressive symptoms, negative mood, lower levels of life satisfaction, and reduced social behaviours and energy [12]. Yang et al. proposed that exercise addiction can lead to obsessive-compulsive symptoms and disordered eating [11]. Fan et al. suggested that exercise is related to recognition of the media's body ideals, resulting in strict eating attitudes among Chinese females [13]. Guo et al. compared the risk factors of exercise addiction between 79 Polish and 194 Chinese youths [7]. Common predictors included the frequency of seeking information related to body ideals, the degree of internalization of athletic body shape, perceived pressures from sociocultural standards, physical fitness goals, mental development goals (e.g., to feel pleasure), and social adjustment goals (e.g., being in the company of others). The degree of internalization of sociocultural standards was a significant predictor only in the Polish sample. The study also highlighted greater influences of sociocultural standards and social adjustment goals in the Chinese sample,

suggesting cross-cultural differences in the formulation of exercise addiction.

Cultural and socio-economic factors

From a historical perspective, societal ideals for male and female bodies have shifted over time. Chubbiness was once considered a sign of wealth across many cultures. However, since the Renaissance, it has been associated with laziness, greed, and disease in the Western world. In China, body ideals have often changed according to the preferences of those in power. Historically, being skinny and physically weak was seen as desirable, indicating aristocracy or scholarly status, as depicted in famous Chinese novels like "Dream of the Red Chamber" and "Legend of the White Snake." Notably, these body standards were strictly applied to women, while men's bodies received less focus. Since the 20th century, there has been heightened awareness of obesity's harms and the influence of mass media on body ideals. Since then, chubbiness in Western countries has been linked to a lack of self-control and irresponsibility towards health. It is also associated with lower socioeconomic classes, as healthy foods are often expensive. With increasing global interaction, the Chinese population has adopted Western body ideals.

Nowadays, both thin and muscular bodies are desirable in China. Mass media plays a significant role in shaping public perceptions of exercise and body ideals. Fitness information is widely disseminated across various platforms, including television and social media (e.g., Facebook, Twitter/X, and Instagram). Athletic body ideals and "fitspiration" content are pervasive online. Images of muscular males and slim females are common on the Internet and billboards. This increased exposure fosters societal concepts of ideal bodies as beautiful, leading to body image dissatisfaction and motivation to exercise. Meanwhile, the boundary between having an ideal body and being healthy has blurred. Public health crises and lockdowns since 2019 have raised awareness of health. Convenient workout products, including portable training tools and digital training guides/classes, have become more popular. The proliferation of these products indicates increased health awareness and changes in exercise behaviors. The digitalization of training classes and new workout tools also allow greater accessibility and flexibility, making exercise a more frequent and integrated part of daily life to improve health.

Recent rapid economic growth in mainland China has a multifaceted relationship with exercise addiction. The prosperity of the food, service, and technology industries plays a significant role in this dynamic. Firstly, increased economic growth leads to greater abundance and variety of food products. As the food industry grows, there is often an increase in the availability and marketing of high-calorie, processed foods. This can lead to unhealthy eating habits and weight gain, prompting individuals to engage in excessive exercise to counteract these effects. Moreover, the food industry's emphasis on diet culture and the promotion of weight loss solutions can contribute to the development of exercise addiction. Individuals may feel pressured to exercise excessively to achieve a certain physique, especially if they are influenced by societal standards of beauty and fitness. Therefore, the prosperity of the food industry can create an environment where unhealthy eating habits and body image concerns are prevalent, potentially leading to exercise addiction as individuals strive to balance their diet and physical appearance. Secondly, economic growth has led to significant changes in the labour market, with a shift towards more sedentary jobs. There

has been a rise in office-based and service-oriented jobs, which require long hours of sitting and minimal physical activity. There is also a greater emphasis on knowledge-based and technological-driven roles, which are also typically sedentary. Individuals with sedentary jobs may feel compelled to engage in excessive exercise outside of work hours to compensate for their inactive lifestyle during the day. This can lead to a cycle of over-exercising to counterbalance the lack of movement at work, sometimes escalating into compulsive exercise behaviours. Lastly, as the economy grows, people have more disposable income and better access to fitness facilities, resulting in increased participation in physical activities. While this is generally positive, economic prosperity can also create societal pressures to maintain a certain physical appearance, potentially contributing to exercise addiction. In summary, the improved economy in mainland China influences exercise addiction through increased access to food and fitness facilities, changes in dietary habits, the rise of sedentary jobs, and societal pressures linked to economic growth.

More recently, the integration of the digital economy and the Chinese government's initiatives to improve physical fitness also has a complex relationship with exercise addiction. With the growth of social media platforms like Weibo, TikTok, and Xiaohongshu, and online shopping sites such as Taobao, Jingdong, and Tmall, ideal body images and fitness information are widely disseminated. These platforms promote an image-driven culture where achieving a "perfect" body becomes a significant social goal. The availability of online exercise classes, guides, and fitness products makes it easier for individuals to engage in physical activities. However, this increased accessibility also comes with heightened societal pressure to adhere to these body ideals. This pressure can drive some individuals to adopt excessive and compulsive exercise behaviours, leading to exercise addiction. Furthermore, the "Regulation of National Fitness" implemented by the Chinese government encourages physical activity and improves access to sports facilities and knowledge. While these initiatives promote a healthier lifestyle, they also contribute to the cultural emphasis on physical fitness. Combined with the technological advancements that make fitness resources readily available, individuals may feel compelled to exercise excessively to meet these societal standards. As such, the digital economy and governmental fitness initiatives, while promoting health and physical activity, also create an environment where the pressure to achieve ideal body standards may lead to exercise addiction. This underscores the importance of balanced public health strategies that emphasize the benefits of exercise while mitigating the risks of overexercising.

Public health prevention and intervention strategies

The Chinese government introduced the Healthy China 2030 blueprint in 2016, declaring public health a precondition for all future economic and social development. This blueprint includes a corresponding action plan that focuses on the promotion of public health and disease prevention, representing a strategic shift from treatment to prevention. The action plan lists 15 goals to be achieved between 2020-2030 with specific targets, which include decreasing the health effects of second-hand smoking, reducing obesity, increasing overall physical activity, and preventing chronic illness. This initiative plays a significant role in preventing exercise addiction by promoting balanced physical activity and healthy lifestyles. One specific aspect of this initiative in relation to exercise addiction is the Physical Activity and Sedentary Behaviour Guidelines (2021). These

guidelines provide detailed recommendations for maintaining a healthy balance between physical activity and sedentary behaviour [14]. They emphasize the importance of moderate exercise and caution against excessive physical activity, which can lead to exercise addiction and related health issues. These guidelines recommend specific amounts of physical activity for different age groups and highlight the benefits of regular exercise for overall health. By promoting these guidelines, the initiative aims to educate the public about the risks of over-exercising and encourage a balanced approach to physical fitness. This helps prevent exercise addiction by fostering a culture of moderation and well-being. By cultivating balanced physical activity habits and providing resources for mental and physical well-being, the Healthy China 2030 initiative seeks to reduce the prevalence of exercise addiction and improve overall public health.

The treatment for exercise addiction primarily involves a combination of psychological interventions and public health initiatives. Cognitive-Behavioral Therapy (CBT) is a common approach used to address the underlying psychological factors contributing to exercise addiction [15]. CBT helps individuals identify and change negative thought patterns and behaviors related to exercise addiction. Through CBT, therapists work with patients to develop healthier attitudes towards exercise and body image, set realistic fitness goals, establish a balanced exercise routine, and provide strategies for managing compulsive exercise behaviors. CBT sessions typically involve techniques such as cognitive restructuring, which helps individuals identify the distorted cognition regarding the self-body images and exercise, replace that with more adaptive and positive cognition, educate people about the correct exercise and physiological knowledge, and (re)build the association between exercise and positive emotions. Behavioral activation, on the other hand, involves the incorporation of non-exercise-related activities into daily life. By addressing the underlying psychological factors and providing practical strategies for managing compulsive exercise behaviors, CBT aims to reduce the risk of relapse and promote long-term recovery. Modified forms of motivational interviewing have also shown promising effectiveness in improving addictive behaviors, including exercise addiction [16] and substance misuse in Chinese samples.

Online resources and support groups are available for individuals dealing with exercise addiction in Western countries. These platforms, including SMART Recovery and in the Room, provide a safe space for people to share their experiences, challenges, and coping strategies, fostering a sense of community and understanding. For example, online forums and social media groups allow individuals to connect with others facing similar issues, offering emotional support and practical advice. This is particularly valuable in Chinese culture where mental health issues are often stigmatized, as it enables individuals to seek help anonymously and without judgment. While there are not many widely known support groups specifically for exercise addiction in mainland China, there are general mental health and addiction support groups that can provide assistance. These groups often offer resources and community support for various behavioral addictions, including exercise addiction. Additionally, online forums and social media platforms can also serve as informal support networks where individuals can share their experiences and seek advice.

Future directions

To effectively address exercise addiction in mainland China, a comprehensive public health approach is essential. This in-

involves revising exercise education materials for the general public, improving technological resource support, and increasing research efforts. While the benefits of exercise are often promoted, the potential drawbacks are frequently overlooked. Public health initiatives should clearly define what constitutes healthy exercise, helping the public identify potential problems in excessive exercises. Additionally, the internet and social media are filled with both adaptive and maladaptive exercise information. Establishing a reliable online resource hub that provides adaptive exercise knowledge, self-help resources, and guidance on cultivating beneficial exercise habits can help tackle exercise addiction. Increasing research efforts on exercise addiction will improve our understanding of the general and unique risk factors, as well as the effectiveness of prevention and intervention programs for different Chinese populations. Longitudinal studies are particularly useful in establishing the causal relationships and tracking changes in behaviors over different time period. Collaboration among researchers, health/public health professionals, and policymakers is crucial for developing assessment tools and methodologies with high cultural sensitivity. This will ensure an accurate representation of the experiences of the Chinese population and contribute to more effective strategies for preventing and addressing exercise addiction.

Conclusion

The booming health and fitness industry in mainland China represents a positive shift towards greater health consciousness. While regular exercise is beneficial, over-exercising can lead to significant physical and mental health issues. To address these concerns, public health initiatives must strike a balance between promoting the benefits of exercise and raising awareness about the risks of exercise addiction. Such initiatives should include educational campaigns that provide clear guidelines on healthy exercise practices and the signs of exercise addiction. Additionally, public health policies should support the development of local as well as nationwide resources such as support groups, counseling services, and helplines for individuals at risk of or struggling with exercise addiction. By adopting this dual approach, the health and fitness movement in mainland China can maximize its benefits, helping people lead healthier lives while also safeguarding against the detrimental effects of excessive exercise.

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