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TREATMENT OF EXERCISE ADDICTION: THE CURRENT STATE OF KNOWLEDGE

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ABSTRACT

Background: The concept of exercise addiction is commonly understood as a repetitive behavior involving compulsive physical activity despite negative physical, psychological, or social consequences. There are several promising treatment options, including psychological, behavioral, and pharmacological approaches.

Aim: This review aims to summarize and evaluate the current state of knowledge on the treatment of exercise addiction, with a particular focus on psychological and behavioral approaches and new potential therapeutic methods.

Material and methods: A literature review was conducted using databases including PubMed and Google Scholar. The review examined studies, case reports, and theoretical frameworks on the classification, comorbidities, and treatment of exercise addiction, with a particular focus on cognitive-behavioral therapy, mindfulness-based interventions, and treatment methods adapted from other behavioral addictions.

Results: The results indicate that cognitive-behavioral therapy is the primary recommended intervention for exercise addiction. Rational-behavioral therapy and mindfulness-based approaches appear beneficial; however, further research is needed. A single case report described the use of quetiapine, with promising but isolated results. Treatment remains complicated due to comorbid disorders such as eating disorders, anxiety, and depression, all of which require concurrent management.

Conclusions: Despite growing interest in exercise addiction, current evidence remains limited due to unclear diagnostic criteria, the homogeneity of study populations, and a lack of data on long-term outcomes. Future research should focus on clearly defining exercise addiction, conducting high-quality clinical trials on randomized groups, and evaluating the long-term effectiveness of therapies.
Keywords: exercise addiction, behavioral addiction, treatment, cognitive-behavioral psychotherapy

INTRODUCTION

Definition

Exercise addiction is defined as "*a morbid pattern of behavior in which the habitually exercising individual loses control over his or her exercise habits and acts compulsively, exhibits dependence, and experiences negative consequences to health as well as in his or her social and professional life*" (Szabo et al., p. 303, 2015). While it is not strictly recognized as a psychiatric diagnosis itself, there is an idea that exercise addiction meets the criteria of behavioral addiction.

The concept of behavioral addiction is established on six crucial components: *salience* (the activity becomes the primary focus, other activities and responsibilities are neglected), *loss of control* (inability to limit the activity), *mood modification* (the behavior used as a coping mechanism), *conflict* (the behavior is affecting personal relationships or one's ability to work), *tolerance* (growing need to engage in the activity), and *withdrawal symptoms* (unpleasant reactions when the behavior is reduced) (Griffiths, 2005). It is important to notice that, according to the American Psychiatric Association, only the gambling disorder has been officially named as a behavioral addiction (DSM-5).

Furthermore, the literature distinguishes between two types of exercise addiction: primary and secondary. While primary exercise addiction may be more aligned with Brown's behavioral addiction model, secondary addiction is closely related to a coexisting medical condition, such as anxiety, depression, obsessive-compulsive disorders, and eating disorders (Meyer et al., 2021; Wang et al., 2026).

Epidemiology

The data indicate that exercise addiction occurs in three to nine percent of individuals who train on a regular basis, more frequently among competitive and endurance athletes (Di Lodovico et al., 2019; Marques et al., 2019). Further studies show that individual sports carry a greater risk than team sports (Mayolas-Pi et al., 2025). In the studied populations, symptoms of exercise addiction were observed in endurance athletes (14,2%), ball game players (10,4%), fitness centre attendees (8,2%) and power disciplines (6,4%) (Di Lodovico et al., 2019), as well as marathon runners (15,4%) (Collado-Boira et al., 2021) and indoor cycling practitioners (13,3%) (Bueno-Antequera et al., 2020).

A study conducted on a group of teenagers showed a higher risk of addiction for boys compared to girls; however, this difference decreases in the case of highly competitive sports (Mayolas-Pi et al., 2025). The same study noted that the risk of additcion was highest in late adolescence.

Risk factors

According to current scientific knowledge, demographic, psychological, and behavioral risk factors for exercise addiction have been identified and described. Eating disorders (anorexia nervosa, bulimia nervosa, binge-eating disorder, orthorexia nervosa) are among the most frequently discussed in this field (Campbell et al., 2025; Piko et al., 2025; Watson et al., 2025). Researchers emphasize that this relationship stems more from the nature of eating disorders, and that compulsive exercise is often used as a compensatory strategy to control body weight, balance calorie intake, and reduce anxiety caused by disordered eating (Weinstein & Szabo, 2023; Watson et al., 2025). The strongest association is observed in the case of anorexia nervosa (48%) and bulimia nervosa (45%), and a noticeable but lower prevalence in binge eating disorder (11%) and orthorexia nervosa (Strahler et al., 2021; Campbell et al., 2025). A meta-analysis conducted by Guo et al. (2025) showed a moderate correlation between body image and risk of exercise addiction in adults, with an emphasis on the cognitive component of body image (what an individual thinks and believes about their appearance). Another study confirms that body dissatisfaction and specifically the drive for thinness are both positively associated with exercise addiction, and concerns about body image play a key role in these relationships (Gori et al., 2021).

The research on the association between exercise addiction and various mental health problems showed statistically significant associations with depression and anxiety (Wang et al., 2025), ADHD (attention-deficit hyperactivity disorder) (Baltes-Flueckiger et al., 2024).

Furthermore, it was found that the severity of exercise addiction was positively correlated with the number of co-occurring mental disorders (Meyer et al., 2021), indicating that these co-occurring disorders may not only increase the risk of exercise addiction but also contribute to its maintenance and clinical complexity.

TREATMENT

The treatment approach should take into account the possible underlying cause of addiction, meaning it should be determined whether the addiction is primary or secondary to co-existing mental health disorders. In the latter case, management of the primary disorder should be prioritized (Weinstein & Weinstein, 2014).

When it comes to primary exercise addiction – when the addiction is driven by the compulsory exercise itself – cognitive-behavioral therapy (CBT) appears to be recommended the most. Developed by Beck in the early 1960s, the idea is that psychological distress is primarily caused by dysfunctional beliefs about the self, world, and the future (Beck, 2005). The cognitive theory states that emotional and behavioral responses are shaped by cognitive processes; hence, dysfunctional cognitions, such as negative automatic thoughts, cognitive distortions (overgeneralization, catastrophizing, black-and-white thinking), and maladaptive core beliefs about self, lead to dysfunctional emotional and behavioral patterns. In the context of exercise addiction, the therapeutic goal is to identify and modify distorted beliefs related to physical activity and replace them with healthier, more balanced interpretations. This typically involves psychoeducation, cognitive restructuring, and behavioral practice to reinforce new thinking and behavioral patterns. However, despite its theoretical relevance, empirical evidence supporting the effectiveness of CBT for exercise addiction remains limited (Weinstein & Weinstein, 2014), as it is based mainly on case reports and small-scale studies.

Given the limited evidence for CBT and the complexity of the disorder, some researchers advocate for broader therapeutic frameworks. For clarity and ease of reference, the corresponding therapeutic strategies are summarized in **Table 1**.

Table 1 A comparison of clinically oriented treatment approaches to exercise addiction.

Author/'s	Therapeutic Intervention
Adams et al. (2003, p. 104)	• Identifying and interrupting the compulsive behavior through supportive individual psychotherapy. • Engaging the patients in understanding the health benefits and importance of moderation.

	• Empowering the patient to develop a self-management strategy • Understanding the organization of the person's defense structure and how the patient is coping with the addictive nature. • Increasing the tolerance of the patient in adapting or accommodating to the compulsion through modification of their psychological defenses, acceptance, and understanding of their response to the gaining of control and appropriate self-management skills. • Unlinking the compulsion and process-specific triggers related to the exercise dependence. • Rebuilding the coping behaviors and enhancing the support system for the patient with respect to exercise.
Szabo and Demetrovics (2022, p. 206-207)	• Having the person recognize and admit that the symptoms cause problems. • Identifying the stage and severity of the problem(s). • Teaching the individual about the value of exercise along with the threats of its morbid practice. • Letting the person find attractive alternatives that should not replace treatment of exercise addiction but complement the habitual exercise behavior. • Reinforcing and teaching the person to appreciate the pleasure of the alternative action (sport, culture, social, etc.). • Adopting a balance sheet of gains and losses as a consequence of the additional or alternative action. • Focusing on the gains and using goal-setting to amplify and expand the gains. • Evaluating goals, changes in feeling states, and intention effects. • If necessary, adjusting the therapy by stepping back one stage. • Generating social support for the new (changed) adaptive behavior.

Theoretical perspectives

Many researchers consider exercise addiction to be a type of behavioral addiction; hence, the idea of using therapies that have been previously tested for other types of addiction. Some of these are forms of cognitive-behavioral therapy (motivational therapy, exposure therapy, substitution therapy, systematic desensitization), while others seem to be more mindfulness-based (acceptance and commitment therapy, meditation). Acceptance and commitment therapy

has been successfully used in treating Internet pornography addiction (Twohig et al., 2010) and substance use disorders (Osaji et al., 2020; Krotter et al., 2024), while meditation proved its effectiveness in smartphone addiction intervention (Choi et al., 2020). It is important to note that, according to current scientific knowledge, these approaches remain largely theoretical in the context of exercise addiction treatment and have not yet been substantiated in clinical research.

Mindfulness

The term "mindfulness" was popularized in a clinical context when Kabat-Zinn developed a Mindfulness-Based Stress Reduction program in 1979. However, the concept and practice of mindfulness have been known for centuries, as they originate from ancient Buddhist traditions. Mindfulness can be characterized by two core components: attention to present-moment experience and acceptance or a nonjudgmental attitude toward that experience. (Bishop et al., 2004). The psychological and behavioral benefits of mindfulness include stress reduction, as well as lower anxiety levels (Mora Álvarez et al., 2023), enhanced emotion regulation (Tang et al., 2026), improvement in self-control (Liu et al., 2022), and cognitive flexibility (Yazıcı Çelebi et al., 2025).

Mindfulness, in combination with other treatments, has demonstrated effectiveness in reducing symptoms of exercise addiction (Anandkumar et al., 2018). Accordingly, the patient was instructed to practice three times a day, for 15 minutes each time. During the practice, he was supposed to focus on his breathing and simply observe the unpleasant sensations in his body (the withdrawal symptoms) in a nonjudgmental manner, without emotional reaction. After 8 weeks, his Exercise Addiction Inventory score decreased from 28 at admission to 6, indicating he became asymptomatic. These results highlight the potential of mindfulness in treating exercise addiction and indicate the need for further studies.

Rational emotive behavior therapy (REBT)

The concept of Rational Emotive Behavior Therapy (REBT) was first introduced by Albert Ellis in 1957. It is a form of cognitive-behavioral therapy that aims to identify one's irrational beliefs that may be causing emotional distress and change them into more rational ones, leading to healthier emotional and behavioral responses. The ABC model explains how psychological reactions arise, with each component representing a specific element of the process:

A – the activating event,

B – what the person believes about that event,

C – the resulting emotional and behavioral consequences.

According to REBT, it is not the event itself (A) that directly causes emotional or behavioral response (C), but rather the individual's beliefs regarding that event (B).

The first study to examine the effects of REBT in patients exhibiting symptoms of exercise addiction was conducted by Outar et al. in 2018. The intervention was divided into three phases: *education, cognitive restructuring*, and *reinforcement.* Within six weeks, participants were educated on the REBT principles, learning how to identify irrational beliefs and develop rational alternatives. The program concluded with review exercises to ensure participants could independently apply learned strategies. The study reported that REBT intervention led to a reduction in exercise addiction symptoms, as well as irrational beliefs, and increased unconditional self-acceptance (USA). These findings are consistent with subsequent research by Knapp et al. (2023) and indicate that REBT is effective in treating exercise addiction, as it addresses the cognitive patterns that contribute to compulsive exercise behavior.

In summary, by challenging irrational beliefs and promoting rational alternatives, REBT provides a structured framework for long-term behavioral and emotional change.

Pharmacotherapy

In the current literature, there is a single case study suggesting a potential role for pharmacological intervention. It describes a patient suffering from bipolar I disorder with comorbid compulsive shopping and exercise addiction (Di Nicola et al., 2010). The patient, a 47-year-old man, was treated with quetiapine – a second-generation antipsychotic medication with antagonistic activity at D1, D2 dopamine, alpha-1, alpha-2 adrenergic, and 5-HT2 serotonin receptors, as well as partial agonism at the 5-HT1A receptor. The symptoms of exercise addiction showed moderate improvement after 4 weeks and significant improvement after 12 weeks. After 24 weeks of quetiapine treatment, the behavioral symptoms disappeared completely. This was confirmed using the Exercise Addiction Inventory (Terry et al., 2004): the score decreased from 28 points at admission ("at risk of addiction") to 12 points after treatment ("asymptomatic"). Nevertheless, further research is needed to clarify quetiapine's effect on behavioral addictions.

DISCUSSION

The purpose of this article was to summarize the current state of knowledge on treating exercise addiction. The current literature on the topic remains preliminary and inconclusive, largely due to challenges in defining and studying the condition. Currently, there is no universally accepted definition or standardized diagnostic criteria. In addition, the majority of studies rely on screening tools (such as the Exercise Addiction Inventory) that measure risk rather than provide a formal diagnosis.

Most studies on exercise addiction were conducted on small, non-diverse groups, such as athletes or college students, which limits the understanding of how the disorder presents in different demographics. Moreover, the absence of longitudinal studies makes it difficult to assess the long-term effectiveness of therapeutic interventions.

Exercise addiction often co-occurs with other psychiatric conditions (eating disorders, depression), which complicates both diagnosis and therapeutic planning. It may be difficult to distinguish whether exercise addiction is a primary disorder or a component of another mental illness.

CONCLUSIONS

Exercise addiction is characterized by a compulsive and uncontrolled pattern of exercise that persists despite negative physical, psychological, or social outcomes. Current treatment strategies are mainly based on cognitive-behavioral therapy; however, the evidence confirming its effectiveness remains limited. Effective treatment of exercise addiction should also address co-occurring psychiatric disorders, particularly eating disorders. Pharmacological interventions have been reported only in isolated cases, and no standard treatment protocols have been established.

In summary, the literature highlights an urgent need for the following actions:

- Establish consensus on definitions and diagnostic criteria, informed by both psychometric and clinical assessments.
- Conduct larger, more diverse longitudinal studies to clarify prevalence, identify risk factors, and evaluate treatment outcomes.
- Conduct research that systematically addresses comorbidity and incorporates psychiatric assessment as a core component of treatment planning.
- Develop and rigorously validate targeted interventions, thoroughly evaluating their effectiveness and long-term impact.

Disclosure

Author's Contribution

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