Towards Recognition: The Case for Including Exercise Addiction in the DSM-5-TR

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Chapter 1: Introduction

History of Exercise Addiction

The term *exercise addiction* (EA) first appeared in the 1970s, initially identified through patterns of excessive exercise that resembled addictive behaviour (Glasser, 1976). One of the earliest discussions on the topic can be traced back to Dr. William Glasser in his 1976 book *Positive Addiction*. This term evolved into EA, describing compulsive, excessive physical activity with negative implications. This condition is now recognized as a psychological issue, marked by withdrawal symptoms when exercise is reduced, a compulsion to increase exercise, and negative impacts on various aspects of life (Alderson, 2019). Alderson (2019) defines exercise addiction as a "multidimensional maladaptive pattern of exercise leading to clinically significant impairment or distress" (p. 1509). Distinguishing between dedicated and compulsive exercisers is crucial for a clear understanding of the differences between the two. Compulsive exercisers persist despite harm, work repercussions, inconvenience, loss of interest in other activities, marital stress, or disturbances (Alderson, 2019). On the other hand, dedicated exercisers are interested in deepening their training but also know their limits (Potel et al., 2022) The fundamental issue causing EA to evolve into an addiction is the compulsive and/or limitless engagement in excessive exercise (Alderson, 2019).

Individuals' perceptions and relationships with EA significantly differ, with some viewing their intense exercise routines positively, as a commitment to health, and others recognizing it as compulsive and detrimental to their well-being (Hausenblas & Downs, 2002). The influence of cultural and social norms further complicates personal connections to exercise addiction, affecting recognition and acceptance of the issue (Zaccagni & Gualdi-Russo, 2023). This varied

personal relationship with EA is explored in academic research, which provides a thorough review of exercise dependence, highlighting the psychological aspects and the fine line between a healthy habit and an addiction (Hausenblas & Downs, 2002).

Definition of EA

Currently, there is no consensus in the literature on how to define EA, with self-report instruments providing only a risk score. Interpreting self-report data is challenging due to varying participant interpretations of the characteristics examined (Szabo et al., 2015). EA has not been included in the *Diagnostic and Statistical Manual of Psychological Disorder,* (5th ed., text rev.; *DSM-5-TR*; American Psychiatric Association [APA], 2022) due to inconsistent findings of the contributing factors that correlate to EA (Szabo et al., 2015). A critical aspect of understanding EA lies in its differentiation from other compulsive or impulsive behaviours. Unlike compulsions or impulse control disorders that share excessive behaviour traits, EA uniquely incorporates elements like tolerance and withdrawal symptoms, akin to substance use disorders (Brewer & Potenza, 2008; Grant & Potenza, 2006). The classification of EA in comparison to recognized disorders like gambling addiction in the *DSM-5-TR* has been discussed extensively (Szabo et al., 2015). Both are considered behavioural addictions, but EA lacks inclusion in the *DSM-5-TR* due to insufficient methodologically rigorous evidence (Szabo et al., 2015). For EA to be considered for *DSM-5-TR* inclusion, like gambling disorder, EA requires more consistent research and robust evidence demonstrating significant impairment or distress caused by the addiction. This approach would align the research methodology of EA with that of gambling disorder, potentially paving the way for its recognition in future *DSM-5-TR* editions (Szabo et al., 2015). Some studies that have been published refer to EA as a behavioural addiction, whereas other studies see it more as a comorbidity with an eating disorder or some

type of mood disturbance (Szabo et al., 2015). Szabo et al. (2015) describe EA as a morbid behavioural pattern wherein regular exercise leads to dependence, compulsive behaviour, loss of control, and negative consequences on health, social life, and professional aspects. It is essential to differentiate between exaggerated exercise primarily for weight loss and EA (Szabo et al., 2015). While exercise is universally acknowledged for its health benefits, its excessive and compulsive form can lead to significant physical and psychological impairments (Berczik et al., 2012).

Colledge et al. (2020) found that individuals reporting comorbidities such as eating disorders, anxiety, depression, borderline personality disorder, or other substance-related and addictive disorders often suffer from EA, suggesting a correlation with these mental health conditions. The correlation between eating disorders and EA is positioned within the framework of behavioural addictions, but excessive exercise patterns also co-occur with other morbidities, including eating or body-image disorders, suggesting a need to separate primary from secondary EA (Weinstein & Szabo, 2023).

Berczik et al. (2012) emphasize that exercise addiction aligns with the core characteristics of behavioural addictions, distinguishing between positive and negative aspects. This notion challenges earlier perspectives, such as those by Glasser (1976), who introduced the concept of "positive addiction" related to exercise, suggesting that not all addictions necessarily result in negative outcomes.

Definition of an Elite Athlete

The classification of an elite athlete extends beyond exceptional physical capabilities to include a distinct mindset and behavioural set that emphasizes continuous improvement, critical thinking, and a readiness to challenge the status quo (McAuley et al., 2022). This elite status is

not defined by mere participation in high-level competitions but is characterized by a rigorous commitment to excellence, involving relentless challenges, meticulous evaluation, and adherence to the highest standards, all of which demand stepping out of one's comfort zone (Informed Practitioner in Sport, 2016). A combination of environmental influences, genetic predispositions, and psychological traits such as resilience, grit, and mental toughness influences the journey to becoming an elite athlete (McAuley et al., 2022; Williams, 2020). Crucially, the path to elite performance is highly individualized, with the athlete's environment playing a pivotal role in fostering necessary adaptations. These adaptations are facilitated by exposure to competitive practice, coaching, and the athlete's inherent capacity for growth and change (Williams, 2020). Ultimately, elite athletes exemplify the importance of an environment that encourages continuous adaptation and development, underscoring that while some may be born with advantageous traits, elite status is achieved through sustained effort and engagement in the sport (Williams, 2020). An elite athlete may be defined as a professional athlete, such as someone who gets paid (McAuley et al., 2022).

Research Question

The two research questions driving this literature review are: what are the contributing factors behind EA, especially in elite athletes; and how can this knowledge inform the inclusion of EA in the DSM-5-TR?

This review will employ a systematic approach to investigate the contributing factors behind EA, particularly in elite athletes, and to explore how this understanding could inform the inclusion of EA in the DSM-5-TR. Initially, the review establishes explicit inclusion and exclusion criteria to identify relevant studies. These criteria encompass factors such as study design, participant characteristics, focus on elite athletes, and the presence of data regarding EA.

Studies that do not meet these criteria, such as those not specifically addressing EA or those concerning nonathlete populations, are excluded. This exclusion is guided by the focus on elite athletes due to the unique pressures and demands they face, which may increase their vulnerability to EA. Additionally, the review considers the extent to which elite athletes are impacted by EA and whether they experience significant harm, providing a rationale for concentrating on this population.

The systematic review methodically searches databases such as PubMed and PsycINFO, ensuring a comprehensive collection of literature in both the psychological and sports-related domains. Data are extracted on the prevalence, psychological and physiological factors contributing to addiction, and current discourse on diagnostic criteria. By synthesizing this data, the review aims to offer a substantiated argument for the recognition of EA in the *DSM-5-TR*, considering the unique context of elite athletes.

Significance

EA, as an affliction marked by a compulsive engagement in physical activity despite negative consequences, emerges as a phenomenon of significant importance in sports and health psychology. The motivation for researching this condition extends beyond academic curiosity, it delves into the realm of public health, where understanding the fine line between healthy activity and pathological behaviour can inform treatment strategies and preventive measures. Scholars argue that EA's inclusion in diagnostic manuals, such as the *DSM-5-TR*, could lead to more accurate diagnosis and improved support for those suffering (Szabo et al., 2015). The condition, often seen in elite athletes who push their bodies to the brink for competitive advantage, necessitates a scholarly spotlight to unravel its complexities and to guard against the potential

detriments of what is conventionally seen as a beneficial practice (McAuley et al., 2022; Williams, 2020).

The study of EA highlights the complex nature of physical activity. While physical activity is typically recommended for its health benefits, it can paradoxically become a harmful addiction for some individuals. Research in this field is significant because it examines the psychological and physiological mechanisms underpinning this transformation (Martín-Rodríguez et al., 2024). By dissecting the experiences, characteristics, and consequences of excessive exercise, researchers can develop targeted interventions that help individuals maintain a healthy balance. Furthermore, this research can challenge the broader societal glorification of extreme fitness routines, highlighting the necessity for a balanced and moderate approach to physical activity.

In studying the personal narratives and realistic data surrounding EA, researchers confront the necessity to examine contributing factors such as personality traits, environmental pressures, and the ever-increasing societal demand for physical excellence (Cakin et al. 2021; Langbein et al., 2021; Weinstein & Szabo, 2023). The significance of this research is amplified in the context of elite athletes, whose entire careers are often predicated on rigorous training regimens. For these individuals, the boundary between dedication and compulsion can be perilously thin, making the identification and management of EA crucial for their long-term well-being (Langbein et al., 2021; Weinstein & Szabo, 2023). Through a comprehensive study, the nuanced understanding of EA could lead to more effective clinical practices and health policies that address the needs of those for whom exercise has shifted from a healthful endeavour to an unhealthy obsession.

Self-Position Statement

EA is a complex issue that poses significant challenges for researchers, clinicians, and individuals alike. The topic's resonance with me is deep, and comes from my journey as a collegiate athlete, a journey marked by witnessing the real effects of EA firsthand. My commitment to understanding this phenomenon is not merely academic, it is an interest deeply rooted in my own experiences and the transformation I have observed in those around me, as exercise transitioned from a healthy habit to a consuming compulsion.

I have felt the pull, the seduction of the endorphin rush, the satisfaction of surpassing limits. I have seen teammates cross invisible thresholds, where discipline bleeds into dependency. This personal experience informs my research, compelling me to ask important questions and seek out untold stories about EA. However, it also introduces ethical considerations around bias. Therefore, in exploring this topic, I must commit to working with discipline and a relentless dedication to evidence-based inquiry. It is about harnessing personal insights to ask better questions while allowing the data to speak without the distortion of my narrative.

In advocating for the inclusion of EA in the *DSM-5-TR*, my stance is both personal and empirical. From a scientific perspective, EA's recognition in the *DSM-5-TR* is pivotal It would acknowledge the condition's severity and its profound impact on individuals' lives, particularly elite athletes whose identities and livelihoods are often inextricably linked to their physical capabilities. My experiences offer me an inside look at EA. I have seen how it can take control, dictate daily routines, and, ironically, lead athletes away from health towards a path of physical and psychological detriment. This dual lens, of personal insight and academic rigour, is what I aim to bring to the discourse on EA.

Mitigating bias is a multilayered process. It starts with self-awareness, recognizing, and declaring my predispositions. It involves rigorous peer review and constructing a research design that is both robust and approachable. Engaging with the data means being willing to be surprised, to have preconceptions challenged, and to pivot when the evidence demands it. I cannot unsee the struggles I have witnessed, nor can I pretend indifference to the real-world implications of my work. But it is precisely this intertwining of personal experience with scientific pursuit that enriches the narrative, ensuring that the story of EA is told with the nuance and complexity it deserves.

The importance of including EA in the *DSM-5-TR* also extends to public health implications. Recognition facilitates diagnosis, fosters understanding, and guides the development of interventions. It also signals to healthcare providers, coaches, and the athletes themselves that what they are experiencing is recognized and legitimate, meriting attention and care.

The prevalence of EA among elite athletes is an area for exploration. The very traits that propel athletes to excellence, discipline, tenacity, and an unwavering commitment to training, can also be their undoing when exercise behavior becomes pathological. My journey as an athlete has shown me the thin line between a deep commitment to sport and an unhealthy obsession. This intimate understanding fuels my research pursuits, urging me to explore not only the breadth of EA's impact but also the subtleties of its manifestation.

Chapter 2: Review of the Literature

Theoretical Approach

EA presents a unique challenge in the field of mental health due to its similarities with recognized behavioral addictions, despite not being formally classified as such. EA affects individuals' emotional and social well-being in ways that parallel other addictive behaviors, although its diagnosis is not standard and relies heavily on clinical judgment (Hausenblas et al., 2017). The utilization of specific tools like the Exercise Addiction Inventory helps in evaluating hallmark features of addiction such as salience, mood modification, and withdrawal symptoms (Hausenblas et al., 2017). Furthermore, the comprehensive analysis by Freimuth et al. (2011) contextualizes EA within the broader spectrum of behavioural addictions, highlighting its distinctiveness from compulsions and impulse control disorders by outlining criteria such as tolerance, withdrawal, and persistence despite negative consequences. This introduction serves to frame our exploration of EA's complex nature and its placement within the realm of behavioural addictions, considering its significant implications for emotional and social functioning.

Behavioural Addiction

EA, though not formally classified as a mental health disorder, has characteristics similar to recognized behavioural addictions, affecting emotional and social well-being (Hausenblas et al., 2017). The diagnosis relies on clinical judgment and is supported by tools such as the Exercise Addiction Inventory, which evaluates various factors including salience, mood modification, and withdrawal symptoms (Hausenblas et al., 2017). Freimuth et al. (2011) offer a detailed analysis of EA, placing it within the broader spectrum of behavioural addictions and drawing comparisons with substance dependence. They point out its distinctiveness from

compulsions and impulse control disorders, with specific criteria such as tolerance, withdrawal, and persistence despite negative consequences (Freimuth et al., 2011).

The compulsion to engage in physical activity, often to regulate mood or avoid negative emotions, can lead to detrimental effects, like those observed in other behavioural addictions like gambling or internet use (Freimuth et al., 2011; Hausenblas et al., 2017). The presence of withdrawal symptoms and the development of tolerance are notable indicators of the addiction's progression (Freimuth et al., 2011). The journey towards EA can be described through Freimuth et al.'s (2011) four-phase model, which encapsulates the shift from recreational to compulsive exercise, paralleling other addictive behaviours where initial voluntary engagement escalates into a problematic, compulsive need.

Additionally, the coexistence of EA with disorders such as eating disorders suggests a complex relationship, with shared underlying mechanisms contributing to a spectrum of compulsive behaviours (Freimuth et al., 2011). Individuals continue to exercise despite injuries and the disruption of personal and social responsibilities, which highlights the significant functional impairment akin to that of other behavioural addictions (Hausenblas et al., 2017). Through these findings, Freimuth et al. (2011) and Hausenblas et al. (2017) underscore the need to consider EA within the domain of behavioural addictions, acknowledging its unique characteristics and its significant impact on individuals' lives.

Self-Determination Theory

Self-determination theory (SDT), introduced by Deci and Ryan in 1980 and extended in 2007, offers a robust framework for investigating motivational factors that drive individuals in their physical activities (Erosz et al., 2016). SDT underlines a spectrum of motivation which is

closely tied to the degree of self-determination and how external factors may influence behaviour (Erosz et al., 2016).

In an innovative approach, Dinardi et al. (2021) integrated SDT within an interactional model of EA to delve into the complex psychological mechanisms at play. This model elucidates the intricate nature of EA, positing that the development of such behaviours is significantly influenced by personal beliefs and the surrounding environment. The interactional model of EA extends an earlier framework by integrating additional psychological and situational elements to better capture the multifaceted nature of EA. This model now includes personal factors like self-concept, which influences how individuals perceive themselves and their exercises behaviours. It also incorporates situational factors such as attractive alternatives, highlighting the impact of available exercise options on individual choices. Additionally, the model expands the incentives for exercise to encompass both intrinsic motivations, like enjoyment, and extrinsic motivations, such as social recognition. A new domain, exercise-related stressors, is added to acknowledge the stress that can arise from exercise itself, including performance anxiety and injury. Grounded in SDT, this expanded model provides a comprehensive framework for understanding the complex interplay between individual motivation and environmental contexts in the development of EA (Dinardi et al., 2021).

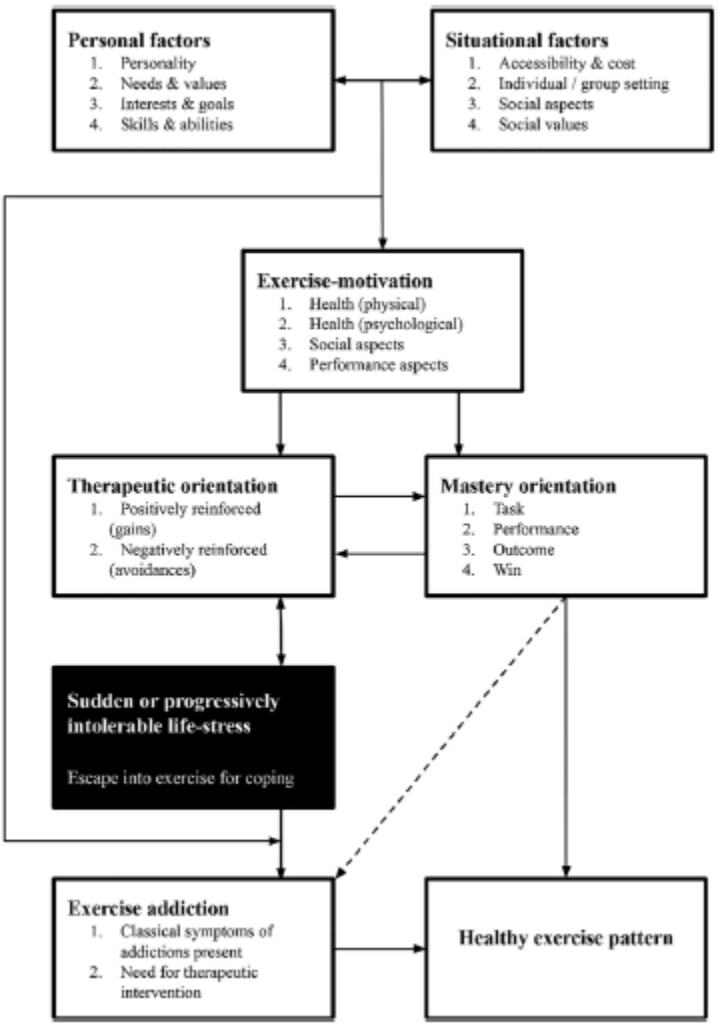

Figure 1. The Interactional Model of Exercise Addiction (from "The Expanded Interactional Model of Exercise Addiction," by J. S. Dinardi, A. Y. Egorov & A. Szabo, 2021, Journal of Behavioral Addictions, 10(3), p. 627).

Central to SDT are the three intrinsic psychological needs: autonomy, competence, and relatedness (Dinardi et al., 2021). Dinardi et al. (2021) enriched the model by incorporating *self-concept* under the domain of personal factors, emphasizing the SDT principle of autonomy. The perceptions and beliefs an individual holds about themselves are potent forces that can lead them toward or prevent them from engaging in addictive exercise behaviours. This inclusion

accentuates the pivotal role autonomy plays in aligning exercise with one's self-concept and values, which in turn influences motivational orientation towards physical activity (Dinardi et al., 2021).

The model further integrates *attractive alternatives* as a situational factor, resonating with the SDT's competence component. Dinardi and colleagues (2021) argued that individuals might select specific exercises over others based on their sense of competence and mastery in those activities. This dimension reflects the interplay of intrinsic motivations, such as personal enjoyment, with extrinsic factors like social support, illustrating how the environmental context and personal motivation interact to affect behaviour.

Additionally, Dinardi and colleagues (2021) introduced *exercise-related stressors* as a new domain, bringing to light how unfulfilled psychological needs can lead to detrimental outcomes such as EA. They contended that stressors like performance anxiety and the inability to meet expectations could undermine the needs for competence and autonomy, driving individuals toward maladaptive behaviours like compulsive exercise. This complex interplay between psychological needs, stress, and exercise behaviour underlines the significance of SDT in the context of EA (Dinardi et al., 2021).

When applied to the study of elite athletes, SDT uncovers new perspectives on the development of EA within high-stress sports environments. The inherent sense of choice and control these athletes usually have may be compromised by external pressures for acclaim or the demands of maintaining high-performance levels (Visser et al., 2019). These external factors can lead athletes to engage in intensive training regimens, which while necessary for skillfulness and peak performance, also pose risks of overexertion and burnout, especially in the absence of self-compassion (Visser et al., 2019). Furthermore, the single-minded pursuit of training and

competition may strain their social ties, touching upon the SDT's need for relatedness (Visser et al., 2019).

Thus, the expanded interactional model of EA by Dinardi and colleagues (2021) presents a comprehensive understanding of EA. By integrating SDT, the model sheds light on how the fulfillment or thwarting of basic psychological needs can shape addictive exercise behaviours. This sophisticated approach not only underscores the complexity of EA but also highlights the necessity to cater to psychological needs in designing interventions to address this condition. Elite athletes exemplify the motivational spectrum posited by SDT, often commencing with intrinsic motivations and, over time, potentially being influenced by extrinsic factors such as the pursuit of accolades, financial gain, or public acclaim (Visser et al., 2019).

Causes and Effects

The growing recognition of EA has spurred extensive research into the factors that contribute to its development and persistence. A deeper understanding of these contributing factors is essential for identifying individuals at risk and developing effective interventions. Recent studies, including those by Gori et al. (2021) and Cakin et al. (2021), have highlighted the complex interplay of psychological and personality traits that influence EA. These investigations reveal that factors such as body image concerns, self-esteem, and perfectionism play pivotal roles in shaping the behaviours and attitudes associated with EA. By examining these elements, we can gain valuable insights into the underlying mechanisms driving EA, offering pathways for both prevention and treatment.

Contributing Factors

Increased awareness of EA has stimulated research into its risk and protective factors. Gori et al. (2021) have made a significant contribution to this field by exploring how EA

correlates with factors such as drive for thinness, bulimia, body dissatisfaction, body image concerns, and self-esteem. Their research underscores the intricate processes by which these elements interact and impact the development and persistence of EA in habitual exercisers.

Gori et al. (2021) found that the drive for thinness, bulimia, and body dissatisfaction are correlated with EA, echoing previous studies that suggest individuals with heightened levels of these factors have a heightened risk of adopting problematic exercise habits. Importantly, their work posits that concern over body image may partly mediate the influence of the drive for thinness, bulimia, and body dissatisfaction on EA, implying that adverse perceptions of one's body image can lead to excessive exercise as a coping mechanism.

A key finding from Gori et al. (2021) is the identification of self-esteem as a significant protective factor against EA. Through moderated mediation analyses, they revealed that higher self-esteem levels attenuate the indirect effects of drive for thinness, bulimia, body dissatisfaction, and body image concerns on EA. This insight suggests that bolstering self-esteem could be a strategic approach to reducing the risk of EA in susceptible individuals.

Further exploring the personality traits associated with EA, Cakin et al. (2021) highlight perfectionism, a tendency characterized by unreasonably high personal standards and harsh self-criticism, as being associated with a range of psychopathological issues, including EA. Their review sheds light on the relationship between perfectionism and EA, proposing that individuals with perfectionistic tendencies may be more susceptible to forming an unhealthy relationship with exercise. Crucially, the examination by Cakin et al. delves into the various facets of perfectionism and its connection to EA, indicating that elements like concern over mistakes and elevated personal standards may have a more significant correlation with EA.

Negative Effects of EA

EA represents a multidimensional condition with numerous detrimental effects spanning biological, psychological, physiological, social, and emotional domains. Biologically, the compulsion to overexercise can precipitate a range of health issues such as musculoskeletal injuries, cardiovascular problems, immune system impairment, and reproductive dysfunctions, reflecting the serious consequences of disregarding the body's limits for recovery and rest (Cannavo et al., 2001; Delimaris, 2014; Hackney, 2001). Psychologically, EA is often intertwined with traits like perfectionism and mood disorders, driving individuals to rely on physical activity as a maladaptive coping mechanism that perpetuates their psychological distress (Freimuth et al., 2011; Weinstein & Szabo, 2023; Weinstein et al., 2015). Physiologically, habitual overexertion disrupts normal bodily functions, evidenced by changes such as increased cortisol levels, and heightened resting heart rates during periods of exercise withdrawal, akin to symptoms observed in other addictive behaviours (Aidman & Woollard, 2002; Martín-Rodríguez et al., 2024). Socially, the pressures of societal norms and the elevated expectations placed on athletes can amplify the risks of EA, pushing individuals towards an unhealthy obsession with fitness and performance (Lichtenstein et al., 2017; Oblinger-Peters & Krenn, 2020; Zaccagni & Gualdi-Russo, 2023). Emotionally, the inability to engage in exercise can trigger severe mood disturbances and withdrawal symptoms, mirroring the dependency and acute distress characteristic of more recognized forms of addiction (Aidman & Woollard, 2002). Altogether, these facets illustrate the profound and pervasive impact of EA, necessitating a comprehensive understanding and approach to effectively address this complex condition.

Biological. Excessive exercise and overtraining can lead to a range of negative biological effects in initially healthy individuals, highlighting the importance of moderation in physical

activities (Delimaris, 2014). Musculoskeletal injuries can result from the demands placed on the body, leading to both overt and subclinical injuries (Delimaris, 2014). Cardiovascular risks are also noted, with excessive endurance exercise potentially causing adverse cardiac remodeling and increasing arrhythmia risks (Delimaris, 2014). Furthermore, exercise-induced muscle damage, alterations in immunity leading to increased infection risks, and reproductive dysfunctions due to hormonal imbalances are significant concerns (Delimaris, 2014). Chronic negative energy balance, potentially leading to conditions like anorexia nervosa, especially among female athletes, osteoporosis risks due to hormonal and nutritional deficiencies, and sleep disorders exacerbated by exercise-induced neuroendocrine imbalances, are also highlighted as potential consequences of overtraining (Delimaris, 2014).

Excessive exercise is known to affect various bodily systems, including the reproductive functions in both genders. In men, intensive physical activity can disrupt the hypothalamic-pituitary-testicular axis, leading to decreased testosterone levels and subsequent reproductive endocrine dysfunction (Hackney, 2001). This hormonal imbalance can impair sperm production and overall reproductive capabilities (Hackney, 2001). For women, similarly, intense exercise regimes may cause disruptions in the hypothalamic-pituitary axis, resulting in neuroendocrine abnormalities and hypogonadism, which manifest as menstrual dysfunctions such as luteal phase defects, amenorrhea, or anovulation (Cannavo et al., 2001). These conditions are commonly observed among athletes engaged in demanding sports like running or ballet, indicating a significant risk of long-term reproductive issues from excessive exercise (Cannavo et al., 2001).

EA, driven by the pursuit of dopamine, a neurotransmitter linked to the brain's reward system, can lead to several negative effects (Marques et al., 2021). Imbalances in neurotransmitters like dopamine and serotonin have been implicated in addictive behaviours,

suggesting a connection between neurotransmitter activity and EA (Martín-Rodríguez et al., 2024). This compulsive behaviour may result in increased tolerance, necessitating more intense or prolonged activity to achieve the same pleasurable "high," and leading to withdrawal symptoms like irritability, anxiety, and depression when not exercising (Marques et al., 2021). The dopamine imbalance may also exacerbate mental health issues, while the physical toll of excessive exercise can cause injuries and chronic health problems (Marques et al, 2021). Furthermore, this addiction can disrupt one's social and professional life due to the overwhelming need to exercise, neglecting relationships and responsibilities (Lichtenstein et al., 2017). Chronic stimulation of the reward system disrupts its natural balance, potentially leading to diminished enjoyment in daily activities and a dependency on exercise for mood regulation (Marques et al., 2021).

Psychological. On a psychological level, individuals with certain personality traits, such as perfectionism and obsessive-compulsive tendencies, may be more susceptible to developing EA (Weinstein & Szabo, 2023). Additionally, mood disorders, particularly depression and anxiety, can contribute to the adoption of exercise as a coping mechanism for emotional distress (Weinstein et al., 2015). The psychological rewards associated with exercise, such as the release of endorphins, may establish a reinforcing cycle that leads to addictive behaviours (Freimuth et al., 2011).

The relationship between EA and eating disorders highlights the condition's complexity. Berczik et al. (2012) discuss primary versus secondary EA, differentiating based on the presence of co-occurring disorders, particularly eating disorders. This distinction is crucial for understanding the underlying motives and potential interventions. Researchers indicate that secondary exercise dependence is characterized by a dependence on exercise alongside

disordered eating, while primary exercise dependence involves a reliance on exercise with normal or healthy eating habits, without the presence of an eating disorder (Adams, 2013). The exploration by Berczik et al. (2012) incorporates physiological theories, including the endorphin hypothesis and thermogenic regulation, and psychological perspectives, such as affect regulation and cognitive appraisal hypotheses.

Physiological. Physiological factors also play a significant role in EA. Furthermore, hormonal changes induced by intensive or prolonged exercise, including alterations in cortisol levels, may contribute to the development of addictive exercise patterns (Martín-Rodríguez et al., 2024).

Physiologically, Martin-Rodrigues et al. (2024) observed a notable increase in resting heart rate among participants who were temporarily deprived of their regular exercise routines. This physiological change is particularly significant as it provides a measurable indicator of the body's response to exercise deprivation, akin to withdrawal symptoms seen in other forms of addiction. The elevated heart rate suggests that the body undergoes stress and potential dysregulation when expected physical activity is withheld, reflecting the physical dimension of EA (Martin-Rodrigues et al., 2024). The correlation between higher self-reported exercise addiction scores and greater shifts in resting heart rate further emphasizes the physiological tethering to habitual exercise patterns and the potential health implications of EA (Aidman & Woollard, 2002).

Social. In the sociocultural realm, societal pressure and norms regarding physical fitness and appearance can contribute to EA, particularly when individuals feel compelled to meet societal expectations (Zaccagni & Gualdi-Russo, 2023). Media influence, with its portrayal of

idealized body images and success stories in sports, may further influence individuals, especially elite athletes, to engage in excessive exercise (Zaccagni & Gualdi-Russo, 2023).

Moreover, elite athletes face unique stressors and pressures that may contribute to EA. High-performance expectations from themselves, coaches, and fans can instill a continuous drive to push physical limits (Martín-Rodríguez et al., 2024). Concerns about injury or the pressure to recover quickly from injuries may drive athletes to engage in compulsive exercise, elevating the risk of EA (Lichtenstein et al., 2017). Additionally, the transition out of professional sports can be a challenging period, prompting some athletes to resort to excessive exercise as a coping mechanism for identity loss and other stressors (Oblinger-Peters & Krenn, 2020).

Individuals with higher levels of self-reported EA experienced more significant mood disturbances and physiological changes upon missing a scheduled exercise session (Linchestein et al., 2017). This relationship between the degree of self-reported addiction and the severity of withdrawal symptoms elucidates the subjective nature of EA and its varied impacts on individuals. It highlights the importance of considering personal perceptions of exercise behaviour in understanding and addressing EA (Aidman & Woollard, 2002).

Emotional. On the emotional front, Aidman and Woollard (2002) found significant increases in negative mood states among the exercise-deprived group, indicating a substantial emotional response to the lack of physical activity. Specifically, these individuals reported heightened levels of tension, depression, anger, fatigue, and confusion within 24 hours following the missed exercise session. This manifestation of withdrawal-like symptoms underscores the emotional dependency that can develop in individuals with a high degree of exercise commitment (Aidman & Woollard, 2022). The presence of these symptoms suggests that exercise, much like other addictive behaviours, can lead to acute emotional distress when access

is restricted, highlighting the psychological risks associated with excessive exercise (Aidman & Woollard, 2002).

Cyclical Nature

The study of EA reveals a complex interplay of physiological, psychological, cognitive, and behavioural elements that drive its cyclical nature. Martín-Rodríguez et al. (2024) describe this condition as a "double-edged sword," where regular, beneficial exercise can become compulsive and detrimental. The obsession to exercise prioritizes it over other crucial activities and can lead to physical injuries, psychological distress, and social isolation (Martín-Rodríguez et al., 2024). This addiction involves withdrawal symptoms when not exercising, an increasing tolerance that demands more exercise for the same satisfaction, and a notable lack of control over exercise habits (Martín-Rodríguez et al., 2024). The cyclical dependency is characterized by repeated failures to control behaviour and continuing excessive exercise despite adverse consequences (Berczik et al., 2012).

Berczik et al. (2012) explore several physiological hypotheses, including the endorphin and thermogenic regulation hypotheses, which suggest that mood-enhancing and stress-reducing effects of exercise, driven by increased body temperature and beta-endorphin release, reinforce the behaviour. This leads individuals to repeatedly seek these physiological rewards (Berczik et al., 2012). From a psychological standpoint, exercise is utilized as a tool for mood management and coping with negative emotions, creating a dependency cycle characterized by withdrawal symptoms and further exercise to alleviate discomfort (Berczik et al., 2012).

The cognitive appraisal hypothesis discussed by Berczik et al. (2012) suggests that individuals rationalize excessive exercise behaviours as a necessary coping mechanism for stress, perpetuating the dependency as they increasingly rely on exercise for stress relief (Berczik et al.,

2012). Additionally, the behaviorist perspective details how exercise can be negatively reinforced as avoidance behaviour, where exercise is used to escape or avoid negative states, leading to patterns of withdrawal and relapse (Berczik et al., 2012).

Freimuth et al. (2011) add that the cycle begins with a compulsion to engage in physical activity, often accompanied by anxiety if unable to exercise. Over time, individuals develop a tolerance, needing more intense or longer workouts to achieve the same satisfaction or endorphin rush. The cycle is momentarily broken when they exercise again, feeling relief from withdrawal and a rewarding sense of accomplishment, which only serves to reinforce the addictive behavior (Freimuth et al., 2011). Even when faced with negative consequences like injuries or social isolation, they continue to rationalize their excessive exercise as being healthy. After a brief respite, the compulsion resurfaces, often intensified by life stressors, and the cycle repeats, requiring professional help to address and overcome (Freimuth et al., 2011).

The integration of these perspectives underscores the multifaceted nature of EA, emphasizing the importance of recognizing and addressing the signs to mitigate its adverse effects on health (Martín-Rodríguez et al., 2024). Risk factors like perfectionism, high neuroticism, and societal pressures are significant in predisposing individuals to this condition, highlighting the need for comprehensive strategies to break its detrimental cycle (Martín-Rodríguez et al., 2024).

Diagnosis and Treatment

The inclusion of EA in the *DSM-5-TR* could significantly enhance diagnosis, treatment, and understanding of this condition. Recognizing EA within the *DSM-5-TR* framework would offer numerous benefits, including improved differentiation between healthy exercise habits and problematic behaviors (Egorov & Szabo, 2013). This recognition could lead to increased

awareness, stimulate research into effective treatments, and potentially improve insurance coverage and access to care (Egorov & Szabo, 2013). Although EA's current absence from the *DSM-5-TR* highlights the difficulties in categorizing it alongside other behavioral addictions like gambling disorder (APA, 2022; Colledge et al., 2020), the similarities between EA and these recognized addictions suggest that its inclusion could provide a more comprehensive approach to addressing this complex issue. Establishing EA as a formal disorder could contribute to reducing stigma and fostering a balanced perspective on the role of exercise in mental and physical health (Colledge et al., 2020; Egorov & Szabo, 2013).

Inclusion Into the DSM-5-TR

Recognizing EA in the *DSM-5-TR* could offer several advantages by enhancing diagnosis and acknowledgment, thereby assisting healthcare professionals in distinguishing between healthy exercise habits and problematic behaviors (Egorov & Szabo, 2013). This inclusion would not only raise awareness about the condition but also stimulate research into effective treatments and interventions, potentially improving insurance coverage and access to care for those affected. It could further help reduce the stigma associated with EA, promoting a balanced perspective that emphasizes both physical and mental well-being. The classification of EA as a mental health disorder would lend legitimacy to the condition and establish a formal framework for addressing this complex issue, benefiting both individuals and the broader mental health community (Egorov & Szabo, 2013).

Despite the Behavioral Addiction category in the *DSM-5-TR*, which currently recognizes gambling addiction and considers including Internet addiction in the appendix, EA remains conspicuously absent (APA, 2022). EA is not currently recognized as a non-substance-related disorder in the *DSM-5-TR*, with gambling disorder being the only behavioural addiction included

(Colledge et al., 2020). Colledge et al. (2020) explore the potential for EA's inclusion by comparing its symptoms and behavioural patterns with those of recognized addictions, notably gambling disorder. They identify a need for specific diagnostic criteria that reflect the unique characteristics of EA, suggesting that more empirical research is necessary to establish a robust theoretical framework.

The challenge in recognizing EA within the *DSM* framework is compounded by the general perception of exercise as beneficial and the difficulty in distinguishing between healthy exercise habits and pathological behaviours. Colledge et al. (2020) emphasize that the current absence of a clear and accepted theoretical framework complicates the inclusion of EA in the *DSM*, calling for further research to clarify its diagnostic criteria and support its recognition as a distinct behavioural addiction.

Evidence and Implications

Despite the growing concern around EA, the *DSM-5-TR* has not officially recognized EA as an addictive disorder, a stance rooted in limited research, particularly regarding its association with psychiatric conditions (Meyer et al., 2021). This highlights the complexities in differentiating between healthy exercise practices and potential pathological overuse, as outlined by Meyer et al. (2021). The *DSM-5-TR* acknowledges pathological gambling as a non-substance-related disorder but stops short of including EA due to insufficient evidence for such classification, signifying the strict criteria required for the acknowledgment of new addictive disorders within the *DSM-5-TR* framework (Meyer et al., 2021).

Colledge et al. (2020) present evidence that EA could be conceptualized as a behavioural addiction, akin to a gambling disorder, as per *DSM-5-TR* standards. Their analysis reveals that EA shares significant parallels with behavioural addictions, having identified 56 distinct

symptoms that resonate with seven of the nine *DSM-5-TR* criteria for gambling disorder. Such overlap points to a notable congruence between EA and recognized behavioural addictions, including a set of 10 preliminary criteria for diagnosing EA that reflect the diagnostic framework for behavioural addictions (Colledge et al., 2020). These criteria include symptoms such as an escalation in exercise volume to achieve desired effects, an inability to reduce exercise despite the intent, and a persistent preoccupation with exercise activities. Furthermore, the behavioural implications of EA, such as prioritizing exercise over other life aspects and persistent exercise even when faced with physical harm, emphasize the compulsive, detrimental nature that is symptomatic of addictive behaviours (Colledge et al., 2020). Moreover, EA is characterized by both the pursuit of positive sensations and the avoidance of negative states, mirroring the motivational patterns seen in other addictive behaviours (Colledge et al., 2020). By drawing these parallels, Colledge et al. argue for the need to consider excessive exercise as a behavioural addiction, underscoring the compulsive nature of the activity, the continuation despite adverse consequences, and the psychological challenges faced upon cessation, which align with the core characteristics of behavioural addictions.

Current Treatment

Treatment approaches for EA primarily focus on psychological interventions, with cognitive-behavioral therapy (CBT) and dialectical behavior therapy (DBT) being the most recommended modalities (Corazza & Dores, 2023; Ferraro, 2023; Freimuth et al., 2011; Nathiya et al., 2023). These therapies aim to help individuals recognize and alter the underlying thoughts and behaviours driving their compulsive exercise patterns. The goal is not to eliminate physical activity, given its health benefits, but to guide patients toward a healthier relationship with exercise (Nathiya et al., 2023). By addressing maladaptive beliefs about exercise, self-esteem

issues, and mood disturbances, these treatments work towards reducing the rigidity of exercise routines and encouraging a balanced approach to physical activity (Corazza & Dores, 2023).

CBT. Freimuth et al. (2011) and Corazza and Dores et al. (2023) present a comprehensive look at the application of CBT in treating EA, highlighting its effectiveness across cognitive, behavioral, and emotional dimensions. Unlike substance use disorders, where abstinence may be the objective, the goal in treating EA is to manage its compulsive aspects while recognizing the health benefits of exercise (Freimuth et al., 2011). This involves moderating behaviors and might include diversifying activities to interrupt the addiction cycle (Freimuth et al., 2011).

CBT specifically targets maladaptive beliefs and behaviours associated with excessive exercise, such as the misguided notion that it is essential for weight control (Freimuth et al., 2011). It helps individuals alter harmful thoughts, enhance coping mechanisms, and normalize exercise routines (Freimuth et al., 2011). Techniques such as behavioural activation encourage participation in varied, fulfilling activities, and strategies for stress management and emotional regulation provide healthier ways to deal with triggers (Corazza & Dores et al., 2023). Additionally, gradual exercise reduction and exposure therapy are employed to adjust exercise habits and lessen dependency (Corazza & Dores et al., 2023). Freimuth et al. (2011) also suggest incorporating behavioural strategies like contingency management to promote healthy behaviours and reduce reliance on exercise as a primary coping mechanism. Crucially, addressing any co-occurring disorders, especially eating disorders, is essential to fully manage both the psychological and physical dimensions of EA (Freimuth et al., 2011).

DBT. DBT can be an effective treatment for someone with EA focusing on the development of skills in four key areas: mindfulness, distress tolerance, emotion regulation, and

interpersonal effectiveness (Nathiya et al., 2023). Mindfulness teaches individuals to observe their thoughts and feelings without judgment, which can help them recognize the motivations behind excessive exercise and the use of exercise to avoid uncomfortable emotions (Nathiya et al., 2023). Distress tolerance skills are cultivated to manage the urge to overexercise by finding healthier coping mechanisms for stress and emotional discomfort (Nathiya et al., 2023). Emotion regulation strategies assist in understanding and managing emotions, reducing the reliance on exercise to control or suppress negative feelings (Nathiya et al., 2023). Interpersonal effectiveness skills improve communication and relationships, which may suffer due to the addiction.

Nathiya et al. (2023) conducted a psychological study to explore therapy practices beneficial in treating addictions, emphasizing the significant role of psychological treatments like CBT and DBT in managing addiction recovery. Key findings highlight CBT's effectiveness in developing coping strategies and recognizing unhealthy behaviours, and DBT's role in improving emotional regulation and interpersonal effectiveness, underlining the necessity of incorporating modern technologies and experienced professionals in therapy practices for better treatment outcomes (Nathiya et al., 2023).

Ferraro (2023) also notes that DBT incorporates several key components that contribute to its effectiveness in addiction treatment. The emphasis on skills training enhances emotional regulation, mindfulness, and distress tolerance, crucial for coping with urges and managing emotional disturbances linked to addiction. Mindfulness practices within DBT help individuals become more aware of their triggers and learn to cope with urges nonjudgmentally, critical for maintaining sobriety. Moreover, the distress tolerance component is associated with longer periods of sobriety by helping clients endure uncomfortable urges without succumbing to relapse

(Ferraro, 2023). Additionally, this DBT variant includes training in interpersonal effectiveness, which employs communication and relationship skills to replace substance use, supporting better social functioning and recovery outcomes (Ferraro, 2023).

Overall, this structured approach in DBT for addiction treatment addresses both the psychological and behavioural aspects of addiction, providing a comprehensive toolkit for individuals to manage their recovery effectively.

Chapter 3: Implications for Counselling Psychology

In addressing EA among athletes, psychologists face the critical task of differentiating between high-frequency exercise and EA, which often overlaps with other disorders like anorexia athletica, exercise bulimia, and body dysmorphic disorder (Quraishi & Chahal, 2021). This distinction is vital for accurate diagnosis and effective intervention. Key to this process is understanding the motivational factors driving EA, such as obsessive passion and dedication (Nogueira et al., 2018) and utilizing standardized assessment tools to navigate the challenges posed by terminological inconsistencies and varied measurement approaches (Nogueira et al., 2018). Effective interventions encompass setting SMART goals, educating athletes about the physical risks of excessive exercise, and referring them for appropriate psychological treatment (Doran, 1981; Quraishi & Chahal, 2021). Psychological approaches, particularly CBT, play a crucial role in addressing EA by helping athletes manage cognitive distortions such as all-or-nothing thinking, overgeneralization, catastrophizing, and emotional reasoning (Freimuth et al., 2011; Quraishi & Chahal, 2021). This holistic approach requires collaboration among physiotherapists, psychologists, and sports coaches to develop comprehensive treatment plans and foster a balanced relationship with exercise (Quraishi & Chahal, 2021; Nogueira et al., 2018).

Implications for Sport Psychologists

Applications to Clinical Practice

Psychologists working with athletes must differentiate between high-frequency exercise and EA (Quraishi & Chahal, 2021). This distinction is crucial as EA often coexists with other disorders such as anorexia athletica, exercise bulimia, and body dysmorphic disorder (Quraishi & Chahal, 2021). Recognizing these comorbid conditions is vital for effective diagnosis and

treatment (Quraishi & Chahal, 2021). Understanding the motivational factors and behaviours that lead to EA, such as obsessive passion and dedication, is also crucial for identifying athletes at risk (Nogueira et al., 2018). The challenges in defining and diagnosing EA due to terminological confusion and varying measurement tools necessitate the use of standardized tools and criteria for consistent assessment (Nogueira et al., 2018).

Implications for Clinical Psychology

Diagnosis and Treatment

Clinical psychologists are essential in diagnosing EA and distinguishing it from other psychiatric disorders such as eating disorders and obsessive-compulsive disorder (OCD). Effective treatment requires an integrated approach that combines CBT with other therapeutic modalities to address both the psychological and physical components of EA (Freimuth et al., 2011; Quraishi & Chahal, 2021). Additionally, clinical psychologists must be equipped to manage comorbid conditions, as EA frequently coexists with mood disorders, anxiety disorders, and personality disorders, necessitating a comprehensive treatment approach that addresses all facets of the patient's mental health (Nogueira et al., 2018).

Implications for Health Psychology

Behavioral Change

Health psychologists play a crucial role in fostering behavioral change and promoting balanced exercise habits. They can employ motivational interviewing and behavior modification techniques to help individuals establish and maintain healthy exercise routines (Quraishi & Chahal, 2021). Furthermore, health psychologists can implement preventive interventions by educating individuals about the risks associated with excessive exercise and advocating for moderation to prevent the onset of EA (Nogueira et al., 2018).

Implications for Developmental Psychology

Adolescent and Youth Populations

Developmental psychologists need to understand how EA manifests in younger populations and how developmental stages influence exercise behaviors. Early intervention strategies and educational programs tailored to developmental stages are essential to address EA and support healthy growth and development (Freimuth et al., 2011). Additionally, developmental psychologists should explore the role of family dynamics in the development of EA, supporting families in creating environments that reduce the risk of addiction (Quraishi & Chahal, 2021).

Implications for Counseling Psychology

Holistic Counseling Approaches

Counseling psychologists are crucial in integrating holistic approaches to address both the psychological and physical aspects of EA. By incorporating techniques from humanistic and integrative therapies, they can help individuals develop a balanced and healthy relationship with exercise (Nogueira et al., 2018). Providing empathetic support and creating a nonjudgmental therapeutic environment are key to fostering self-acceptance and effective coping strategies (Quraishi & Chahal, 2021).

Implications for Neuropsychology

Understanding Neurological Impacts

Neuropsychologists can contribute by exploring the neurological impacts of EA on brain function, particularly in areas related to reward, impulse control, and addiction. Research into these neurological aspects can enhance understanding of EA's biological underpinnings and inform more targeted treatment strategies (Nogueira et al., 2018). Cognitive interventions

developed from neuropsychological insights can help manage EA more effectively (Freimuth et al., 2011).

Implications for Social Psychology

Social Influences

Social psychologists can investigate how societal pressures, peer influences, and media representations contribute to the development of EA. Understanding these social factors can help in designing interventions to counteract the negative influences that may lead to or exacerbate EA (Quraishi & Chahal, 2021). Additionally, exploring group dynamics and developing social support systems can provide valuable support for individuals struggling with EA, facilitating recovery through group therapies and support networks (Nogueira et al., 2018).

Interventions and Treatment

Interventions are designed to provide comprehensive support, ranging from setting specific goals to educating patients and referring them to psychological treatments. By utilizing these strategies, clinicians can help athletes develop healthier relationships with exercise and prevent the negative consequences associated with addiction. Each intervention is tailored to address different aspects of the addiction, ensuring a holistic approach to treatment and recovery.

SMART Goals. Develop specific, measurable, achievable, results-focused, and timely (SMART) goals for athletes (Doran, 1981). For instance, recommending that a runner switch to swimming temporarily can help manage their exercise routine without requiring total abstinence from physical activity. This approach ensures that the athlete continues to engage in beneficial physical activity while addressing their addiction (Quraishi & Chahal, 2021).

Education and Explanation. Educate patients about the physical consequences of continued excessive exercise. This includes explaining the risk of physical injuries, potential

long-term damage, and the importance of moderation (Nogueria et al., 2018). Providing alternative fitness activities can also help reduce dependence. For example, warning athletes about the physical effects if exercise is maintained at the same level and recommending alternative exercises can be effective strategies (Quraishi & Chahal, 2021). Monitoring the physical and psychological health of endurance athletes is essential to prevent adverse effects (Nogueira et al., 2018).

Psychological Referral. Referral to psychological treatment is crucial for addressing EA. CBT is recommended to help patients recognize and change their compulsive behaviours (Freimuth et al., 2011). Psychologists can help athletes understand the psychological underpinnings of their addiction and develop healthier coping mechanisms. Psychological approaches are often the most recommended treatment for EA (Quraishi & Chahal, 2021).

Assessment Tools. Utilizing assessment tools such as the Exercise Dependence Scale (EDS; Hausenblas & Downs, 2002), Obligatory Exercise Questionnaire (OEQ; Pasman & Thompson, 1988), and Exercise Addiction Inventory (EAI; Terry et al., 2004) is essential for diagnosing EA. These tools help identify at-risk individuals and understand their dependency level, which is crucial for effective treatment planning. These tools should be given equal importance as fitness tests in the regime (Quraishi & Chahal, 2021).

Detailed Interventions

Cognitive distortions can significantly impact athletes' perceptions of exercise and contribute to EA. Recognizing and addressing these distorted thought patterns is crucial in helping athletes develop a healthier relationship with physical activity. The following sections outline detailed interventions targeting specific cognitive distortions such as all-or-nothing thinking, overgeneralization, catastrophizing, and emotional reasoning. By addressing these

cognitive distortions, athletes can achieve a balanced approach to exercise that promotes overall well-being and recovery from EA.

All-or-Nothing Thinking. Athletes may believe that any deviation from their exercise routine is a failure. This kind of thinking can lead to excessive exercise as they strive for perfection and fear failure. Addressing this cognitive distortion involves helping athletes understand that exercise does not need to be perfect to be beneficial (Freimuth et al., 2011; Quraishi & Chahal, 2021).

Overgeneralization. Viewing a single instance of missed exercise as a sign of overall failure can create a negative self-perception and reinforce the addiction. Helping athletes understand that missing a workout occasionally does not equate to failure is crucial for recovery. This involves challenging the belief that one missed session will undo all progress (Quraishi & Chahal, 2021).

Catastrophizing. Athletes might imagine the worst-case scenario if they miss a workout, such as losing all their progress or gaining weight rapidly (Nogueira et al., 2018). Addressing these catastrophic thoughts and replacing them with more realistic and positive thoughts can help reduce anxiety and compulsive behaviour (Freimuth et al., 2011). Psychologists can help athletes reframe their thoughts to see missed workouts as minor setbacks rather than disasters (Quraishi & Chahal, 2021).

Emotional Reasoning. Athletes often justify their excessive exercise by their emotional need rather than physical necessity (Quraishi & Chahal, 2021). Educating them on the difference between emotional compulsion and physical need can help in managing their EA. This involves helping athletes recognize that their feelings do not always reflect reality and that it is possible to feel the urge to exercise without needing to act on it (Quraishi & Chahal, 2021).

Implementing these approaches can help athletes develop a healthier relationship with exercise, balancing their physical activity with overall well-being. Collaboration between physiotherapists, psychologists, and sports coaches is essential to create effective treatment plans and support athletes in overcoming exercise addiction (Quraishi & Chahal, 2021). Moreover, promoting healthy exercise practices and using insights from various psychological models discussed in the literature can further aid in developing targeted interventions (Nogueira et al., 2018).

Current Speculation Regarding Inclusion in the DSM

The current speculation about the inclusion of EA in the future editions of the *DSM* highlights several key points. Despite the *DSM-5-TR* including a Behavioral Addiction category that recognizes gambling addiction and considers including Internet addiction, EA remains absent (Colledge et al., 2020; Egorov & Szabo, 2013). Colledge et al. (2020), in their study "Excessive Exercise—A Meta-Review," compare EA to recognized addictions like gambling disorder, highlighting similarities in symptoms and behavioural patterns such as tolerance, withdrawal, and persistence despite negative consequences.

However, EA lacks specific diagnostic criteria reflecting its unique characteristics, complicating its inclusion in the *DSM-5-TR* (Szabo et al., 2015). The challenge in recognizing EA within the *DSM* framework is compounded by the general perception of exercise as beneficial and the difficulty in distinguishing between healthy exercise habits and pathological behaviours (Colledge et al., 2020). Moreover, the absence of a clear and accepted theoretical framework necessitates further research to clarify potential diagnostic criteria and support its recognition as a distinct behavioural addiction (Szabo et al., 2015). Current research gaps, particularly the limited empirical evidence and association with psychiatric conditions, further

impede the inclusion of EA in the *DSM-5-TR* (Meyer et al., 2021). Therefore, future research should focus on establishing a robust theoretical framework and specific diagnostic criteria for EA, aligning with the methodology used for recognized behavioural addictions, to potentially pave the way for its recognition in future *DSM-5-TR* editions (Colledge et al., 2020; Szabo et al., 2015).

Chapter 4: Recommendations

Directions for Future Research

Despite the growing recognition of EA as a significant concern in the sports context, several research gaps persist that need to be addressed to advance our understanding and management of this condition. One major gap is the lack of a consensus regarding an operational definition and standardized measurement tools for EA, which has led to inconsistencies in prevalence rates and hindered the ability to compare findings across studies (Baptista et al., 2019; Szabo et al., 2015). Current self-report measures, such as the EAI and the EDS, vary in their theoretical foundations and may not fully capture the multifaceted nature of EA, particularly in athletic populations where elevated levels of training are normative (Cunningham et al., 2016; Trott et al., 2020). Additionally, most research has focused on nonathletic populations, with limited studies specifically examining EA among elite athletes, who may exhibit unique risk factors and manifestations of the disorder (Formby et al., 2014; Szabo et al., 2015).

Furthermore, the relationship between EA and co-occurring conditions such as eating disorders remains underexplored, particularly regarding the causal pathways and the extent to which these disorders exacerbate each other (Godoy-Izquierdo et al., 2021). Future research should aim to clarify whether EA can exist independently of eating disorders or if it is inherently secondary to such psychopathologies (Adams, 2009; Lichtenstein et al., 2017). There is also a need for more qualitative studies to capture the subjective experiences of those suffering from EA, as these narratives can provide valuable insights into the personal and contextual factors that contribute to the development and maintenance of addiction (Johnston et al., 2011).

Addressing these research gaps will require concerted efforts to establish a standardized definition and measurement of EA, expand research to include diverse athletic populations, investigate the interplay between EA and eating disorders, and develop theoretically grounded intervention strategies. By doing so, future research can provide a clearer understanding of EA and contribute to more effective prevention and treatment approaches for athletes at risk of this debilitating condition.

Research Supporting Inclusion in the DSM-5-TR

To justify the inclusion of EA in the *DSM-5-TR*, it is crucial to establish a clear and consistent definition. Current literature describes EA as a behavioural addiction characterized by a compulsive need to engage in excessive physical activity despite negative consequences (Hausenblas & Downs, 2002). This definition aligns with other recognized behavioural addictions, such as gambling disorders, which are included in the *DSM-5-TR*.

A clearer definition of EA would facilitate more consistent data collection and research findings. This consistency is essential for developing robust diagnostic criteria necessary for *DSM* inclusion. Future research should focus on longitudinal studies that track the progression of EA and its impact on individual's mental and physical health. Such studies would provide the empirical evidence needed to support EA's classification as a distinct behavioural addiction (Szabo et al., 2015).

To establish EA as a diagnosable condition, future research must provide consistent data demonstrating its prevalence, associated risk factors, and impact on quality of life (Colledge et al., 2020). Research should also investigate the co-occurrence of EA with other mental health disorders, such as anxiety, depression, and eating disorders. Identifying these comorbidities will

underscore the clinical significance of EA and the necessity of its recognition in the *DSM-5-TR* (Meyer et al., 2021).

Suggested Research Directions

Longitudinal Studies. Future research should employ longitudinal designs to examine the long-term effects of EA on individuals' psychological and physiological health. These studies would help identify potential causal relationships between EA and other mental health disorders, providing a stronger basis for its inclusion in the *DSM-5-TR* (Meyer et al., 2021).

Neurobiological Studies. Investigating the neurobiological mechanisms underlying EA could provide insights into its similarities with other behavioural addictions. Studies focusing on neurotransmitter imbalances, such as dopamine and serotonin, and their role in EA could further support its classification as an addiction (Marques et al., 2021).

Cross-Cultural Research. Given the varying societal norms and cultural attitudes towards exercise, cross-cultural research is necessary to understand how EA manifests in different populations. This research would help identify universal versus culture-specific aspects of EA, aiding in developing globally applicable diagnostic criteria (Zaccagni & Gualdi-Russo, 2023).

Treatment Efficacy Studies. Evaluating the effectiveness of different treatment approaches, such as CBT and DBT, is essential for developing evidence-based interventions for EA. Research should also explore the potential benefits of integrating physical activity with psychological treatment to manage EA without promoting harmful exercise behaviours (Corazza & Dores, 2023; Freimuth et al., 2011).

Impact on Elite Athletes. Elite athletes are particularly vulnerable to EA due to their high physical demands and performance pressures. Future research should focus on the prevalence of EA in this population, the unique risk factors they encounter, and the effectiveness of targeted interventions. Understanding the specific challenges faced by elite athletes will aid in developing specialized support and treatment programs (Langbein et al., 2021).

The inclusion of EA in the *DSM-5-TR* is crucial for the accurate diagnosis and effective treatment of this condition. By establishing clear diagnostic criteria and conducting rigorous research, the mental health community can better address the needs of individuals suffering from EA. Future research directions, including longitudinal studies, neurobiological investigations, cross-cultural research, and treatment efficacy studies, will provide the necessary evidence to support EA's classification as a behavioural addiction.

Chapter 5: Discussion

Limitations

Reflexive Self-Statement

As I pursue my Master of Counseling degree, focusing on becoming a sports psychologist, my perspective on including EA in the *DSM-5-TR* is shaped by a blend of academic rigour, clinical insights, and a professional aspiration to work with elite athletes.

My academic journey has underscored the interconnectedness of mental health and athletic performance. In my coursework, I have explored the psychological intricacies of sports and exercise, gaining a deeper understanding of the pressures and challenges faced by athletes. The inclusion of EA in the *DSM-5-TR* is not only academically enriching but also crucial for recognizing and addressing the unique mental health needs of athletes, including elite athletes.

In my research, I have encountered individuals whose relationship with exercise transcended mere enthusiasm, evolving into a compulsive need that jeopardized their well-being. These encounters have highlighted the significance of recognizing EA as a distinct disorder, particularly in populations where physical fitness is paramount, such as elite athletes. As a future sports psychologist, I am committed to promoting mental wellness in athletes, and advocating for the inclusion of EA in the *DSM-5-TR* is an integral part of this endeavour.

Ethically, the inclusion of EA in the *DSM-5-TR* aligns with my professional values of inclusivity and holistic care. By acknowledging EA as a diagnosable condition, we validate the experiences of athletes struggling with this issue and pave the way for targeted interventions and support services. This enhances the quality of care for athletes, reduces stigma, and fosters a more supportive athletic community.

My aspiration to work with elite athletes further underscores the importance of recognizing EA in the *DSM-5-TR*. Elite athletes often face immense pressure to perform, which can exacerbate existing mental health issues, including addiction. By addressing EA within the mental health framework, I aim to provide elite athletes with the comprehensive support they need to thrive both on and off the field.

My advocacy for including EA in the *DSM-5-TR* is deeply rooted in my academic pursuits, research, and professional aspirations. By championing the recognition of EA as a legitimate disorder, I aim to contribute to a more inclusive and supportive environment for athletes, particularly elite performers.

Conclusion

EA is a complex condition marked by compulsive exercise despite adverse effects. Recognizing EA in the *DSM-5-TR* could improve diagnosis, awareness, research, and treatment, reducing stigma and enhancing care access. Despite EA's similarities to behavioural addictions like gambling, it is not yet classified as such due to limited research and the challenge of distinguishing it from healthy exercise (Colledge et al., 2020; Egorov & Szabo, 2013; Meyer et al., 2021).

Psychologists working with athletes must differentiate between high-frequency exercise and EA, recognizing comorbid conditions such as anorexia athletica, exercise bulimia, and body dysmorphic disorder (Quraishi & Chahal, 2021). Understanding the motivational factors and behaviours leading to EA, such as obsessive passion and dedication, is crucial for identifying athletes at risk (Nogueira et al., 2018). The challenges in defining and diagnosing EA necessitate the use of standardized tools and criteria for consistent assessment.

Interventions for EA include developing SMART goals, educating patients about the physical consequences of excessive exercise, and providing psychological referrals for treatments like CBT and DBT (Corazza & Dores, 2023; Freimuth et al., 2011; Nathiya et al., 2023). Utilizing assessment tools such as the EDS and the EAI is essential for diagnosing EA (Quraishi & Chahal, 2021).

Despite the *DSM-5-TR*'s inclusion of behavioural addictions like gambling, EA remains absent, partly due to terminological confusion and varying measurement tools (Colledge et al., 2020). Future research should focus on establishing a clear theoretical framework and specific diagnostic criteria for EA, aligning with methodologies used for recognized behavioural addictions (Szabo et al., 2015).

To justify EA's inclusion in the *DSM-5-TR*, future research must demonstrate its prevalence, associated risk factors, and impact on quality of life (Colledge et al., 2020). Longitudinal studies, neurobiological investigations, cross-cultural research, and treatment efficacy studies will provide the necessary evidence to support EA's classification as a behavioural addiction.

Advancing the recognition of EA within the *DSM-5-TR* and refining treatment modalities like CBT and DBT are crucial steps toward addressing this pervasive issue. Continued research and awareness will be pivotal in ensuring that individuals struggling with EA receive the comprehensive care they need, promoting healthier relationships with exercise and enhancing overall well-being.

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Appendix

Summary of Key Studies on EA

Author(s)	Date	Journal	Purpose	Design	Sample	Data collection tool(s)	Findings
Berczik, K., Szabó, A., Griffiths, M. D., Kurimay, T., Kun, B., Urbán, R., & Demetrovics, Z.	2012	Substance Use & Misuse	To synthesize current knowledge on the symptoms, diagnosis, epidemiology, and etiology of exercise addiction (EA).	Literature review	Not applicable	Review of existing literature on EA	EA is defined as a behavioral addiction characterized by compulsion and dependence. It often co-occurs with eating disorders and has specific diagnostic criteria and tools developed for its assessment.
Freimuth, M., Moniz, S., & Kim, S.	2011	International Journal of Environmental Research and Public Health	To clarify the unique features of EA, differentiate it from similar behaviors, and discuss implications for assessment and treatment.	Literature review	Not applicable	Literature and studies on EA	EA is a distinct behavior with specific criteria and phases that differentiate it from healthy exercise habits and other psychological disorders. Assessment and treatment should consider co-occurring disorders like eating disorders.
Gori, A., Topino, E., & Griffiths, M. D.	2021	International Journal of Environmental Research and Public Health	To examine the risk and protective factors of EA among regular exercisers, focusing on the roles of body dissatisfaction, body image concerns, and self-esteem.	Cross-sectional survey	319 Italian regular exercisers	Exercise Addiction Inventory, Eating Disorder Inventory-3, Body Image Concern Inventory, Rosenberg Self-Esteem Scale	Body dissatisfaction, drive for thinness, and bulimia are positively associated with EA. Self-esteem acts as a protective factor, reducing the impact of these factors on EA.
Meyer, M., Sattler, S., Schilling, L., Lang, M., Schmidt, K.,	2021	Frontiers in Psychiatry	To investigate the mental disorders co-occurring with EA.	Cross-sectional study	32 individuals with EA	Exercise Dependence Scale (EDS-21), clinical interviews	EA frequently co-occurs with depressive disorders, obsessive-compulsive disorders, and personality disorders. The study emphasizes the need for

Author(s)	Date	Journal	Purpose	Design	Sample	Data collection tool(s)	Findings
Colledge, F., & Walter, M.							longitudinal studies to understand the stability of EA symptoms.
Weinstein, A., & Szabo, A.	2023	Dialogues in Clinical Neuroscience	To provide a narrative overview of research on EA, identifying critical research issues and discussing the conceptual and methodological challenges in the field.	Narrative overview	Review of over 1000 articles on EA	Literature review, focusing on key topics such as assessment, prevalence, comorbidities, and treatment approaches	EA lacks clear clinical diagnostic criteria, with much research conflating primary and secondary forms of the addiction. The study highlights the need for refined assessment tools, a better understanding of the brain mechanisms involved, and more targeted treatment approaches.