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## **Use of Psychotropic Medications in Athletes: Clinical and Legal Aspects - Narrative review**

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## **Abstract**

### **Background:**

Mental health disorders are increasingly recognized among athletes and may affect performance, well-being, and career longevity. Pharmacological treatment is often required; however, the use of psychotropic medications in athletes raises specific clinical concerns related to safety, performance, and adverse effects, as well as legal issues associated with anti-doping regulations.

### **Aim:**

The aim of this narrative review was to summarize evidence on the clinical safety, performance-related effects, and legal implications of psychotropic medication use in athletes, with emphasis on anti-doping regulations.

### **Materials and Methods:**

A narrative review of the scientific literature was conducted using publications from PubMed, clinical guidelines, and official documents from the World Anti-Doping Agency (WADA). Original studies, systematic reviews, meta-analyses, clinical guidelines, and regulatory documents addressing psychotropic medication use in athletic populations were included. Articles focusing exclusively on non-athletic populations without relevance to physical performance or regulatory aspects were excluded.

### **Results:**

Available evidence indicates that selective serotonin reuptake inhibitors (SSRIs), bupropion, atomoxetine, and melatonin are among the most frequently preferred pharmacological options in athletes suffering from mental health disorders such as depression, ADHD and insomnia due to their favorable safety profiles and limited impact on physical and cognitive performance. Stimulant medications, although recommended as first-line therapy for ADHD in the general population, require careful consideration in athletes because of regulatory restrictions and the need for Therapeutic Use Exemptions (TUEs). Available evidence on antipsychotic use in athletes is limited. Importantly, untreated mental health conditions were associated with poorer functional outcomes than those observed with appropriately monitored pharmacotherapy.

**Keywords:** sport psychiatry, psychotropic medications in athletes, mental health disorders in athletes, WADA regulations, Therapeutic Use Exemption (TUE)

**AI statement:** Publicly available AI-powered websites have been used to identify better wording for certain expressions and sentences to ensure a smooth reading experience, while having no impact on the interpretation of cited evidence.

## 1. Introduction

Athletes are not exempt from experiencing mental health disorders. Research indicates that the prevalence of conditions such as depression in athletes is at least comparable to that observed in the general population. [1,2] Despite their high levels of physical fitness and structured lifestyles, athletes face unique stressors, including intense training schedules, performance pressure, frequent travel, and public scrutiny, all of which can contribute to psychological strain. [3] Mental health disorders in this population can negatively affect both performance and overall well-being, potentially leading to burnout, injuries, or withdrawal from sport. [4] Recognizing and addressing these conditions is crucial, and psychotropic medications may play an important role in treatment when clinically indicated.

When addressing mental health issues in athletes, clinicians should apply the same core treatment approaches used for non-athletes, including psychotherapy, and psychopharmacological interventions. [5, 6, 7] Nonetheless, these treatments must be adapted to meet the specific requirements of the athletic population. Psychopharmacology, in particular, presents unique challenges. Prescribers need to account for safety considerations related to high-intensity exercise, potential side effects that could hinder physical performance, and possible performance-enhancing properties of the medications, including whether they are prohibited in the athlete's sport.

Each year, The World Anti-Doping Agency (WADA) publishes the Prohibited List, which identifies substances banned in competition, out of competition, or under specific circumstances. However, recognizing that athletes may require certain prohibited medications for legitimate medical reasons, WADA has introduced the Therapeutic Use Exemption (TUE) mechanism. A TUE allows an athlete to use a prohibited substance when it is medically necessary, provided that strict criteria are met, including the absence of reasonable therapeutic alternatives and no additional enhancement of performance beyond returning the athlete to normal health. Understanding the principles and practical implications of the TUE process is essential when considering the clinical management of psychiatric disorders in athletes.

This review aims to summarize the clinical and legal aspects of psychotropic medication use in athletes. It focuses on indications, safety considerations, and potential effects on performance, while also discussing regulations such as WADA's Therapeutic Use Exemptions.

## **2. Materials and Methods**

A comprehensive literature review was conducted by utilising Google Scholar, Scopus and PubMed databases. Articles published in English between 2000 and 2025 were considered. The following keywords were used for the search: "psychotropic drugs" AND "athletes" AND "sports psychiatry", "WADA" OR "anti-doping" AND "psychotropic medications", "lithium" OR "lamotrigine" AND "athletic performance", "mood stabilizers" AND "bipolar disorder" AND "athletes", "antidepressants" AND athletes AND "mental health", "SSRIs" OR "SNRIs" AND "high-intensity exercise", "side effects" AND "mood stabilizers" AND "athletes", "mental disorders" AND "athletes" AND "drug safety". The author reviewed articles referring to psychopharmacology in athletes, including side effects of certain medications and possible performance-enhancing effects. Autor also reviewed the World Anti-Doping Agency (WADA) regulations, including the Prohibited List and the Monitoring Program. The author took note of the journals of publication to identify reliable sources, and appropriate measures were taken to check the reliability of citations that provided the relevant information. Articles focusing exclusively on non-athletic populations without relevance to physical performance or regulatory aspects were excluded. The literature was narratively synthesized with emphasis on clinical safety, performance implications, and legal considerations relevant to competitive athletes.

## **3. Results**

Psychotropic medications encompass a broad range of drugs that affect mood, cognition, and behavior. In athletes, these medications are primarily prescribed for the treatment of conditions such as depression, anxiety, attention-deficit/hyperactivity disorder, and sleep disturbances. Understanding the classification of psychotropic drugs—including antidepressants, antipsychotics and mood stabilizers—is essential for evaluating their clinical use, potential side effects, and implications for athletic performance.

### *3.1. Antidepressants*

Available evidence suggests that the use of specific antidepressant agents in athletes is associated with a generally favorable cognitive and safety profile. In the cohort study by Yengo-Kahn and Solomon, athletes treated with antidepressants—predominantly selective serotonin reuptake inhibitors (SSRIs) such as sertraline and escitalopram—demonstrated slightly faster reaction times on baseline neurocognitive testing compared with matched controls, with no significant differences observed in other cognitive domains. Athletes with untreated depression or anxiety exhibited poorer visual memory performance and reported a higher symptom burden. [8] Survey data reported by Reardon and Creado indicate that clinicians working with athletes preferentially prescribe antidepressants perceived as activating or performance-neutral, most commonly bupropion and SSRIs including escitalopram and fluoxetine, while avoiding more sedating agents. [9] Consistent with these prescribing patterns, the network meta-analysis by Pillinger et al. identified substantial heterogeneity in antidepressant side-effect profiles, showing lower risks of sedation and weight gain with agents such as bupropion, sertraline, and fluoxetine compared with other antidepressants. [10] Collectively, these findings describe antidepressant use in athletes as characterized by selective choice of specific agents aimed at minimizing cognitive, metabolic, and performance-related adverse effects.

Research examining the effects of selective serotonin reuptake inhibitors (SSRIs) on athletic performance suggests that these medications do not significantly impair high-intensity exercise. A study by Parise et al. (2001) investigated both acute and chronic fluoxetine intake in healthy young adult men and found no meaningful changes in strength or high-intensity exercise performance. [11]

Experimental studies examining the effects of bupropion on exercise performance indicate that its impact depends on dosing regimen and environmental conditions. Acute administration of bupropion improved endurance performance in high ambient temperatures, whereas no performance-enhancing effect was observed following chronic administration over several days. Both studies were conducted in relatively small samples of physically active participants under controlled laboratory conditions, which limits the generalizability of the findings and precludes conclusions regarding long-term safety or effects in clinical populations.[12,13]

In contrast, evidence from analyses indicate that several antidepressant agents are associated with side-effect profiles that may be less compatible with the demands of athletic performance. The network meta-analysis by Pillinger et al. demonstrated higher risks of sedation, weight gain, and anticholinergic effects with medications including mirtazapine, paroxetine, trazodone, and tricyclic antidepressant. [10] Survey findings reported by Reardon and Creado indicate that such medications are prescribed less frequently in athletic populations. [9]

According to the World Anti-Doping Agency (WADA) Prohibited List, most commonly prescribed antidepressants, including selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), and tricyclic antidepressants, are not classified as prohibited substances. However, some substances, such as bupropion, are included on WADA's Monitoring Program list, meaning they are not currently prohibited but are being closely observed due to potential performance-enhancing effects. Therefore, athletes can generally use standard antidepressants without risk of violating anti-doping regulations and do not require a Therapeutic Use Exemption (TUE), though those using medications on the Monitoring Program list should remain aware of regulatory updates. [14,15]

### *3.2. Antipsychotics*

Available evidence on antipsychotic use in athletes is limited but indicates selective prescribing driven by safety and performance considerations. Survey data reported by Reardon and Creado show that when antipsychotics are considered, clinicians preferentially select agents with lower sedative and metabolic burden, most commonly aripiprazole. [9] Consistent with these clinical preferences, the network meta-analysis by Pillinger et al. demonstrated that aripiprazole is associated with a relatively favorable side-effect profile compared with other antipsychotic agents, including lower risks of sedation, weight gain, and anticholinergic adverse effects. [10]

According to the World Anti-Doping Agency (WADA) regulations, antipsychotic medications are not included in the Prohibited List nor in the Monitoring Program. Both first-generation and second-generation antipsychotics, including commonly used agents such as aripiprazole, risperidone, olanzapine, and quetiapine, are permitted for use in athletes and do not require a Therapeutic Use Exemption (TUE). The absence of these medications from anti-doping restrictions reflects their lack of performance-enhancing properties.[14,15]

### *3.3 Mood stabilizers*

According to survey data reported by Reardon and Creado, clinicians selected lithium and lamotrigine equally frequently for the management of bipolar spectrum disorders. [9] Both medications are listed as first-line therapies for maintenance treatment of bipolar disorder (BD) in the 2018 guidelines of the Canadian Network for Mood and Anxiety Treatments (CANMAT) and the International Society for Bipolar Disorders (ISBD). However, these guidelines emphasize that lithium remains the gold standard for maintenance therapy, as it is effective in preventing both manic and depressive episodes, with a stronger prophylactic effect against mania, and it also exhibits some anti-suicidal properties. In contrast, lamotrigine monotherapy is not recommended for patients with frequent manic episodes due to its limited efficacy in preventing mania. [16] Regarding side effects that may be relevant for athletes, lithium is commonly associated with weight gain, whereas lamotrigine is considered a safer option with less risk of weight increase. [6] Lithium may also increase the risk of abnormal QT prolongation or T-wave abnormalities, while both lithium and lamotrigine are less likely to cause sedation compared to agents such as divalproex. Additionally, tremor can be a notable adverse effect of lithium, affecting up to 10% of treated patients, potentially impacting fine motor control and performance. [16]

According to the World Anti-Doping Agency (WADA) regulations, neither lithium nor lamotrigine are included on the Prohibited List or the Monitoring Program. This indicates that athletes taking these medications for clinically indicated treatment of bipolar disorder are not at risk of violating anti-doping rules solely due to their use. Consequently, both lithium and lamotrigine can be prescribed and used safely in athletes without the need for a Therapeutic Use Exemption (TUE), although monitoring for potential side effects that could affect performance remains important. [14,15]

### *3.4. Medication used in the treatment of ADHD*

In the survey study by Reardon and Creado, atomoxetine, a non-stimulant medication, was reported as the most frequently prescribed drug for the treatment of ADHD in athletes. It was followed by stimulant medications, including lisdexamfetamine, methylphenidate (Concerta), and mixed amphetamine salts (Adderall XR). [9] This prescribing pattern differs from several clinical guidelines, such as the *Attention deficit hyperactivity disorder: diagnosis and*

*management* guideline issued by the National Institute for Health and Care Excellence (NICE) or *Canadian ADHD Practice Guidelines* issued by Canadian ADHD Resource Alliance (CADDRA), which recommends stimulant medications—specifically lisdexamfetamine or methylphenidate—as first-line treatment for both children and adults, with atomoxetine reserved as a second-line option. [17, 18] However, both stimulant and non-stimulant medications used in ADHD treatment have been shown to be effective in reducing core ADHD symptoms and improving functional outcomes, including quality of life, academic performance, and rates of accidents and injuries. [19, 20]

In a systematic review and meta-analysis examining the effects of prescription medications for attention-deficit/hyperactivity disorder (ADHD) on athletic performance, stimulant medications such as methylphenidate and amphetamine derivatives were found to be associated with modest improvements in certain aspects of physical performance.[21]

According to current clinical guidelines, both stimulant and non-stimulant medications used in the treatment of ADHD are generally well tolerated; however, their side-effect profiles may be particularly relevant for athletes. Atomoxetine as well as stimulant medications are associated with cardiovascular effects such as increased heart rate and blood pressure, reduced appetite, insomnia, and anxiety. These effects may negatively impact athletic performance, recovery and hydration status, especially during intense training or competition. [20]

According to the World Anti-Doping Agency (WADA) Prohibited List and the Monitoring Program, pharmacological treatments for ADHD differ substantially in their regulatory status. Stimulant medications commonly used in ADHD treatment, including methylphenidate, lisdexamfetamine, and mixed amphetamine salts, are classified as prohibited substances in competition and require a Therapeutic Use Exemption (TUE) for lawful use by athletes. In contrast, atomoxetine, a non-stimulant selective norepinephrine reuptake inhibitor, is neither included on the WADA Prohibited List nor listed in the Monitoring Program. Consequently, atomoxetine may be prescribed to athletes without the need for a TUE and without anti-doping surveillance, which may partly explain its frequent selection by clinicians treating ADHD in athletic populations despite clinical guidelines generally recommending stimulant medications as first-line therapy. [14, 15]

### *3.5. Medications used in the treatment of insomnia*

In the survey conducted by Reardon and Creado, melatonin was the most frequently selected medication for the treatment of insomnia in athletes. Trazodone was reported as the second most commonly used agent, followed by zolpidem. [9] To further contextualize these prescribing preferences, the study by Paul et al. compared the effects of melatonin, zaleplon, zopiclone, and temazepam on psychomotor performance in a double-blind, placebo-controlled crossover design. Healthy participants received single doses of each drug, and psychomotor performance was assessed repeatedly for up to seven hours post-ingestion using reaction time, logical reasoning, serial subtraction, and multitasking tests. The results demonstrated that melatonin did not impair psychomotor performance on any of the assessed tasks, despite increasing subjective sleepiness. In contrast, zaleplon, zopiclone, and temazepam all produced measurable impairments in psychomotor performance, with the duration and magnitude of impairment increasing with longer-acting agents, particularly zopiclone and temazepam. [22]

Commonly used sleep medications, including melatonin, trazodone, and zolpidem, are not included on the WADA Prohibited List or the Monitoring Program. This indicates that athletes can use these medications for clinically indicated sleep disorders without violating anti-doping regulations or requiring a Therapeutic Use Exemption (TUE). [14,15]

### *3.6. Non-pharmacological treatment of mental health disorders*

Several studies indicate that non-pharmacological interventions play an important role in addressing mental health concerns in athletes, with a range of strategies showing potential benefits. Psychotherapeutic approaches such as individual, family, or group therapy – tailored to sport-specific issues – have been identified as important to the management of mental health symptoms in elite athletes, similar to treatments used in the general population, although research remains limited and largely anecdotal. [7] Additionally, systematic reviews of counseling and psychological interventions in sport demonstrate that cognitive behavioral therapy (CBT), stress management programs, and goal-setting strategies can enhance mental resilience, improve emotional regulation, and support recovery from injury and competitive stress. [23] Qualitative evidence also highlights the importance of the therapeutic alliance and practitioner expertise in effectively engaging athletes in psychotherapy, as athletes place high

value on trust, understanding of sport contexts, and professional skills of mental health providers. [24]

### *3.7. Untreated mental health disorders in athletes*

Available evidence indicates that untreated mental health disorders in athletes are associated with significant negative outcomes affecting both performance and overall health. Athletes with unaddressed mood disorders or insomnia demonstrate poorer neurocognitive performance, increased symptom burden, and reduced quality of life compared with treated athletes and healthy controls. [8, 6, 25, 26] Untreated psychiatric conditions have also been linked to higher rates of sports-related injuries, and prolonged recovery times.[4, 26]

## **Discussion and limitations**

This narrative review highlights that psychotropic medications can be used safely and effectively in athletes when carefully selected and appropriately monitored. Available evidence suggests that clinicians treating athletes tend to prefer agents with favorable side-effect profiles, minimal sedative or metabolic burden, and limited impact on cognitive and physical performance. This prescribing approach is reflected across several medication classes, including antidepressants, antipsychotics, mood stabilizers, ADHD medications, and sleep agents, and aligns with existing clinical guidelines and anti-doping regulations.

Importantly, regulatory considerations, particularly those related to the World Anti-Doping Agency (WADA), play a significant role in treatment decisions. While most psychotropic medications are permitted for use in sport, stimulant medications used for ADHD require Therapeutic Use Exemptions, which may influence clinicians to favor non-stimulant alternatives despite guideline recommendations. This highlights the complex balance between clinical efficacy, athlete safety, and regulatory compliance in sports psychiatry.

Crucially, the findings of this review emphasize that untreated mental health conditions may pose greater risks to athletes than the potential side effects of psychotropic medications. Depression, anxiety, bipolar disorder, ADHD, and sleep disturbances are associated with impaired performance, increased injury risk, and reduced recovery. When appropriately prescribed, psychotropic medications can improve symptoms, functional outcomes, and overall well-being, thereby supporting both mental health and athletic performance. Therefore,

avoidance of pharmacological treatment solely due to concerns about side effects or regulatory issues may be detrimental if it results in inadequate management of psychiatric disorders.

This review has several limitations that should be acknowledged. First, much of the available evidence on psychotropic medication use in athletes is based on survey studies, small cohort studies, or experimental trials conducted in non-athletic populations, which limits the generalizability of the findings. In particular, data on prescribing patterns largely rely on self-reported clinician preferences rather than objective prescription or outcome data. Second, many experimental studies assessing the effects of psychotropic medications on performance and cognition involve small sample sizes and short follow-up periods, precluding conclusions regarding long-term safety, effectiveness, and real-world athletic performance. Additionally, heterogeneity in study designs, outcome measures, and athletic populations makes direct comparison across studies challenging. Finally, anti-doping regulations and clinical guidelines are subject to regular updates, which may limit the long-term applicability of regulatory interpretations presented in this review.

Future research should focus on generating high-quality, athlete-specific evidence regarding the safety, efficacy, and performance-related effects of psychotropic medications. Large-scale prospective studies and randomized controlled trials involving diverse athletic populations are needed to better assess long-term outcomes, optimal dosing strategies, and sport-specific risks associated with these medications. Additionally, further investigation into sex differences, age-related factors, and the interaction between psychotropic drugs, training load, and environmental conditions would improve individualized treatment approaches. Finally, research integrating clinical outcomes with anti-doping considerations, including the impact of Therapeutic Use Exemptions on access to care and treatment adherence, may help refine guidelines and support evidence-based decision-making in sports psychiatry.

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Not applicable

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Natalia Bruska - conceptualization, methodology, formal analysis, writing - review and editing, supervision

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Bartłomiej Błaszkowski - investigation, data curation

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All authors have read and agreed with the published version of the manuscript.

## **Informed consent statement**

Not applicable.

## **Data availability statement**

Not applicable.

## **Conflict of interest**

The authors declare no conflict of interest in relation to this study.

## **Declaration of Generative AI and AI-Assisted Technologies**

In preparing this work, the authors used ChatGPT (OpenAI) for the purpose of improving language and readability, text formatting, and grammar correction. After using this tool/service, the authors have reviewed and edited the content as needed and take full responsibility for the content of the publication.

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