Pharmacologic performance enhancement: What to consider before prescribing

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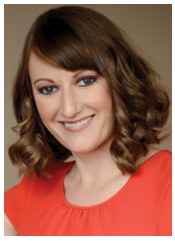

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"When you raced, was it possible to perform without doping?"

"That depends on which races you wanted to win. The Tour de France? No. Impossible to win without doping. Because the Tour is a test of endurance where oxygen is decisive."

– Lance Armstrong, Le Monde interview (June 28, 2013)

Performance enhancement in sports ("doping") dates back to Ancient Greece. This was an era when Olympic athletes would attempt to improve their physical performance by consuming magic potions, herbal medications, and even exotic meats such as sheep testicles—a delicacy high in testosterone. Advances in medical and pharmaceutical technologies have increased both the range of enhancement agents available and their efficacy, leading to the development of anti-doping agencies and routine screening for doping in athletics. This has led to the renouncement of titles, medals, and financial sponsorship of athletes found to have been using prohibited substances during competition.

While doping in elite athletes often forms the nidus of media attention, the pressure to compete and perform at, or even beyond, one's potential extends into many facets of today's achievement-focused society. In the face of these pressures, individuals are increasingly seeking medications to enhance their performance across numerous domains, including cognitive, athletic, and artistic endeavors. Medication classes used to enhance performance include stimulants, which increase attention, executive function, and energy; cholinesterase inhibitors, which may ameliorate age-related memory decline; and beta-blockers, which decrease physiologic symptoms of anxiety and have been demonstrated to be beneficial for musical performance.[1] Fifty-three percent of college athletes report using prescription medications to enhance athletic performance,[2] and most college students who take stimulants without a prescription use them to study (84%) or stay awake (51%).[3]

Pharmacologic performance enhancement is the use of medications by healthy individuals to improve function in the absence of mental illness. Psychiatrists are increasingly finding themselves in the controversial position of "gatekeeper" of these medications for enhancement purposes. In this article we:

- outline arguments that support the use of psychopharmacology for performance enhancement, as well as some serious concerns with this practice
- discuss special considerations for pediatric populations and the risk of malpractice when prescribing for performance enhancement
- offer practice guidelines for approaching requests for psychopharmacologic performance enhancement.

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Disclosures
The authors report no financial relationships with any company whose products are mentioned in this article, or with manufacturers of competing products.

Performance enhancement: The wave of the future?

The ethical principle that supports providing medication for performance enhancement is beneficence, the promotion of the patient's well-being. In other words, it is a physician's duty to help his or her patient in need. Individuals seeking performance enhancement typically present with suffering, and the principle of beneficence would call upon the psychiatrist to help ameliorate that suffering. Furthermore, patients who seek performance enhancement may present with impairing "subsyndromal" psychiatric symptoms (for example, low-grade attentional difficulty that occurs only in one setting), which, even if they do not rise to the threshold of a DSM diagnosis, may improve with psychiatric medications.

Using medical knowledge and skills beyond the traditional physician duty to diagnose and treat medical conditions is not unprecedented (eg, when surgeons perform cosmetic enhancement). Might elective enhancement of cognition and psychological performance through the judicious use of medication be part of the future of psychiatry? If cognitive and emotional enhancement becomes a more widely accepted standard of care, might this increase both individual and societal innovation and productivity?

Dilemma: Cautions against performance enhancement

One of the major cautions against prescribing psychotropics for the purpose of performance enhancement is the lack of clearly supported efficacy. Psychiatric medications generally are studied in individuals who meet criteria for mental illness, and they are FDA-approved for use in ill persons. It may be erroneous to extrapolate that a medication that improves symptoms in a patient with an illness would achieve the same target effect in a healthy individual. For example, data on whether stimulants provide neurocognitive enhancement in healthy individuals without attention-deficit/hyperactivity disorder is mixed, and these agents may even promote risky behavior in healthy controls.[4] Furthermore, dopamine agonism may compress cognitive performance in both directions,[5] as it has been observed that methylphenidate improves executive function in healthy controls, but is less beneficial for those with strong executive function at baseline.[6]

In the face of unclear benefit, it is particularly important to consider the risk of medications used for performance enhancement. Pharmacologic performance enhancement in individuals without psychopathology can be considered an "elective" intervention, for which individuals typically tolerate less risk. Physical risks, including medication-related adverse effects, must be considered, particularly in settings where there may be temptation to use more than prescribed, or to divert medication to others who may use it without medical monitoring. In addition to physical harm, there may be psychological harm associated with prescribing performance enhancers, such as pathologizing variants of "normal," diminishing one's sense of self-efficacy, or decreasing one's ability to bear failure.

Finally, there are ethical quandaries regarding using medications for performance enhancement. Widespread adoption of pharmacologic performance enhancement may lead to implicit coercion for all individuals to enhance their abilities. As a greater proportion of society receives pharmacologic enhancement, society as a whole faces stronger pressures to seek pharmacologic enhancement, ultimately constricting an individual's freedom of choice to enhance.[6] In this setting, distributive justice would become a consideration, because insurance companies are unlikely to reimburse for medications used for enhancement,[7] which would give an advantage to individuals with higher socioeconomic

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Patients seeking performance enhancement may have 'subsyndromal' symptoms that might improve with pharmacotherapy

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status. Research shows that children from higher socioeconomic communities and from states with higher academic standards are more likely to use stimulants.[8]

Areas of controversy

Pediatric populations. There are special considerations when prescribing performance-enhancing medications for children and adolescents. First, such prescribing may inhibit normal child development, shifting the focus away from the normative tasks of social and emotional development that occur through leisure and creativity, experimentation, and play to an emphasis on performance and outcomes-based achievement.[9] Second, during childhood and adolescence, one develops a sense of his or her identity, morals, and values. Taking a medication during childhood to enhance performance may inhibit the process of learning to tolerate failure, become aware of one's weaknesses, and value effort in addition to outcome.

Malpractice risk. Practicing medicine beyond the scope of one's expertise is unethical and unlawful. In the past 30 years, medical malpractice has become one of the most difficult health care issues in the U.S.[10] In addition to billions of dollars in legal fees and court costs, medical malpractice premiums in the U.S. total more than $5 billion annually,[11] and "defensive medicine"—procedures performed to protect against litigation—is estimated to cost more than $14 billion a year.[12]

When considering performance-enhancing treatment, it is the physician's duty to conduct a diagnostic assessment, including noting target symptoms that are interfering with the patient's function, and to tailor such treatment toward measurable goals and outcomes. Aside from medication, this could include a therapeutic approach to improving performance that might include cognitive-behavioral therapy and promotion of a healthy diet and exercise.

Treatment rises to the level of malpractice when there is a dereliction of duty that directly leads to damages.[13] Part of a physician's duty is to educate patients about the pros and cons of different treatment options. For performance-enhancing medications, the risks of addiction and dependence are adverse effects that require discussion. And for a pediatric patient, this would require the guardian's engagement and understanding.

What to do if you decide to prescribe

Inevitably, the decision to prescribe psychotropic medications for performance enhancement is a physician-specific one. Certainly, psychiatrists should not feel obligated to prescribe performance enhancers. Given our current state of pharmacology, it is unclear whether medications would be helpful in the absence of psychopathology. When deciding whether to prescribe for performance enhancement in the absence of psychopathology, we suggest first carefully considering how to maintain the ethical value of nonmaleficence by weighing both the potential physical and psychologic harms of prescribing as well as the legal risks and rules of applicable sport governing bodies.

For a psychiatrist who chooses to prescribe for performance enhancement, we recommend conducting a thorough psychiatric assessment to determine whether the patient has a treatable mental illness. If so, then effective treatment of that illness should take priority. Before prescribing, the psychiatrist and patient should discuss the patient's specific performance goals and how to measure them.

Any prescription for a performance-enhancing medication should be given in conjunction with nonpharmacologic approaches, including optimizing diet, exercise, and sleep. Therapy to address

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A medication that improves symptoms in a patient with an illness might not achieve the same effect in a healthy individual

problem-solving techniques and skills to cope with stress may also be appropriate. The patient and psychiatrist should engage in regular follow-up to assess the efficacy of the medication, as well as its safety and tolerability. Finally, if a medication is not efficacious as a performance enhancer, then both the patient and psychiatrist should be open to re-evaluating the treatment plan, and when appropriate, stopping the medication.

References

1. Brantigan CO, Brantigan TA, Joseph N. Effect of beta blockade and beta stimulation on stage fright. Am J Med. 1982;72(1):88-94.
2. Hoyte CO, Albert D, Heard KJ. The use of energy drinks, dietary supplements, and prescription medications by United States college students to enhance athletic performance. J Community Health. 2013;38(3): 575-850.
3. Advokat CD, Guidry D, Martino L. Licit and illicit use of medications for attention-deficit hyperactivity disorder in undergraduate college students. J Am Coll Health. 2008;56(6):601-606.
4. Advokat C, Scheithauer M. Attention-deficit hyperactivity disorder (ADHD) stimulant medications as cognitive enhancers. Front Neurosci. 2013;7:82.
5. Kimberg DY, D'Esposito M, Farah MJ. Effects of bromocriptine on human subjects depend on working memory capacity. Neuroreport. 1997;8(16):3581-3585.
6. Farah MJ, Illes J, Cook-Deegan R, et al. Neurocognitive enhancement: what can we do and what should we do? Nat Rev Neurosci. 2004;5(5):421-425.
7. Larriviere D, Williams MA, Rizzo M, et al; AAN Ethics, Law and Humanities Committee. Responding to requests from adult patients for neuroenhancements: guidance of the Ethics, Law and Humanities Committee. Neurology. 2009;73(17):1406-1412.
8. Colaneri N, Sheldon M, Adesman A. Pharmacological cognitive enhancement in pediatrics. Curr Opin Pediatr. 2018;30(3):430-437.
9. Gaucher N, Payot A, Racine E. Cognitive enhancement in children and adolescents: Is it in their best interests? Acta Paediatr. 2013;102(12):1118-1124.
10. Moore PJ, Adler, NE, Robertson, PA. Medical malpractice; the effect of doctor-patient relations on medical patient perceptions and malpractice intentions. West J Med. 2000;173(4):244-250.
11. Hiatt H. Medical malpractice. Bull N Y Acad Med. 1992;68(2):254-260.
12. Rubin RJ, Mendelson DN. How much does defensive medicine cost? J Am Health Policy. 1994;4(4):7-15.
13. Kloss D. The duty of care: medical negligence. Br Med J (Clin Res Ed). 1984;289(6436):66-68.

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