

“FYI: Can Viagra Make You A Better Athlete?” Media Review

James TAYLOR*, Faculty of Health Sciences, University of Ottawa, Ontario, Canada

* Auteur(e) correspondant | Corresponding author : Jamestaylor101@hotmail.com

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Introduction : Les athlètes ont commencé à prendre du Viagra pour acquérir un avantage concurrentiel. L'utilisation de Viagra peut connaître un essor dans la communauté des sportifs en raison de sa capacité présumée à augmenter l'aptitude physique d'une personne. Cet article présente l'impact du Viagra sur la société, sur ses consommateurs et sur les organismes sportifs, et examine si ses usages prétendus à des fins de performance sont valables et sans risque.

Pharmacologie : Le Viagra agit en relaxant les cellules musculaires lisses par l'inhibition de la PDE5, ce qui augmente la biodisponibilité de la GMPc.

Résultats : Lorsque le Viagra a été administré, les sujets avaient un VO2 max plus élevé et récupéraient plus rapidement d'hypertension artérielle pulmonaire. Les autres résultats sont mitigés et mal établis.

Obstacles : Le fait de permettre le Viagra dans la communauté sportive pourrait susciter des inquiétudes auprès des organismes sportifs, et le réglementer pourrait affecter de manière inégale ceux qui en ont besoin pour une fonction sexuelle saine.

Conclusion : Ces résultats ne démontrent pas une corrélation directe entre le Viagra et l'amélioration de la performance athlétique. En outre, la prise de Viagra peut poser des risques pour la santé. Le Via-

Mots-clés :

Viagra, un athlète, la concurrence, l'amélioration.

Abstract:

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Introduction: Athletes have started taking Viagra to gain a competitive edge. Viagra's use might be expanding into the athletic world for its alleged boost to one's physical capability. This paper will discuss Viagra's impact on society, its users, athletic organisations, and whether its purported performance enhancement uses are valid and safe.

Pharmacology: Viagra works by relaxing smooth muscle cells through the inhibition of PDE5, thus, increasing the bioavailability of cGMP.

Results: Subjects had a higher VO2 max and recovered faster from pulmonary hypertension when given Viagra. Other results are mixed and not well established.

Barriers: Allowing Viagra into the athletic community may cause concern from sports organisations but will conversely and unequally burden those who require Viagra for healthy sexual function.

Conclusion: These findings do not directly correlate to an improvement in athletic performance. Furthermore, taking Viagra may pose as a risk to one's health. Viagra should only be taken upon consultation with a health care professional.

Keywords:

Viagra, athlete, competition, improvement.

Article Summary

An article from *Popular Science* discussed a new drug duality for athletes with Viagra. The article suggested that endurance athletes such as runners, cyclists, football players, and mountain climbers may use Viagra to increase their performance ability. Viagra's potential performance enhancement properties are accomplished through muscle relaxation, vasodilation, and increased blood flow (Lecher, 2012).

Don Catlin, former UCLA Olympic researcher, stated that Viagra could be especially helpful to mountain climbers and skiers due to high altitudes and the level of performance required for these sports. Catlin believes that any benefit to supplementing Viagra would only result in a minor 1-1.5% improvement (Lecher, 2012). This paper elaborates on the reported effects of Viagra found within the existing literature and also discusses other ramifications of Viagra's acceptance into the athletic domain. It concludes by suggesting precautionary measures when taking medications and proper consultation with medical professionals beforehand.

History and Pharmacology of Viagra

Viagra was originally developed as an antianginal therapy; however, it was proven no more effective than current medications (Jackson, Montorsi & Cheitlin, 2002). In 1998, the US FDA approved the use of Viagra for erectile dysfunction since it proved to significantly enhance erectile function in adult men (Goldstein et al., 2002).

Viagra is a selective inhibitor of cyclic guanosine monophosphate (cGMP) – specific phosphodiesterase type 5 (PDE5). PDE5 degrades cGMP in the corpus cavernosum of the penis; however, Viagra increases the bioavailability of cGMP which plays a primary role in relaxing smooth muscle and thus allows for a prolonged erection (Goldenberg, 1998; Jackson, Montorsi & Cheitlin, 2006).

Interpretation and Analysis of Claims

The U.K. Sport and Drug Information Database, which monitors athletic interest in different substances, found that Viagra was among the top 50 inquiries made by athletes at 0.28% (Petroczi & Naughton, 2010). Viagra has varying effects on different types of unhealthy patients; while some showed marginal improvements, others experienced a worsened quality of life (Barst et al., 2012; Jackson et al., 2006; Lederer et al., 2012). Findings with healthy patients are more consistent.

When taken orally, Viagra is rapidly absorbed and achieves maximum plasma concentration within 30-120 minutes (Goldenberg, 1998). Viagra is typically administered in

the following three doses: 25mg, 50mg, and 100mg. One study found that the vasodilatory effects of Viagra in healthy men with normal endothelium showed no statistically significant difference in hand veins (Dishy et al., 2001). Controversially, a high dose study using 100mg was found to reduce blood pressure by 7-10mmHg in resting healthy young men 1-3 hours after intake (Goldstein et al., 2002). This lowered blood pressure could result in energy conservation and less exertion on the body. However, if blood pressure drops significantly, hypotension could become a risk.

Viagra was not found to statistically alter heart rate, blood pressure, or laboratory tests (DeBusk et al., 2004; Goldenberg, 1998; Jackson et al., 2006; Tracqui et al., 2002). VO_2 is the maximum capacity for which an individual can intake oxygen in the lungs. An exercise capacity study suggested that VO_2 was higher in Viagra users compared to normal subjects. This study also showed that Viagra helped sustain alveolar-capillary membrane conductance (Snyder, Olson, Johnson & Frantz, 2008). Thus, Viagra may help improve gas exchange and oxygen saturation, which may result in a more efficient cardiac system. Increased oxygen diffusion could lower the body's cardiac output as nutrients are more efficiently delivered.

Viagra is of particular interest in altitude-related pulmonary hypertension (PH) because of its effects on gas exchange and hemodynamic abilities. High altitude environments can result in hypoxic pulmonary vasoconstriction, which increases pulmonary arterial pressure and leads to PH. Viagra may protect against the effects of altitude-induced PH (Perimenis, 2005; Vitalie et al., 2007). PH lowers exercise capacity due to reduced O_2 delivery to the blood (Rubin, 1997; Weitzenblum, 2003). One particular study of healthy mountaineers found that Viagra reduced PH at sea level and at an altitude of 5400m during both exercise and rest (Ghofrani et al., 2004). Furthermore, O_2 saturation may be improved after several days of high altitude exposure (Richalet et al., 2005).

Adverse Health Effects

ED affects up to 30 million men in the United States and Viagra has been used to treat over 25 million in the US ("The History," n.d.; Tracqui et al., 2002). The number of deaths due to Viagra per filled prescription is considerably higher than other treatments for ED (Mitka, 2000; Strom, 2001). However, most deaths are usually linked to other underlying conditions like cardiovascular disease and drug-drug interactions. Risks to adverse reactions and death have been linked in those with heart murmurs, uncontrolled hypertension, hypertrophic cardiomyopathy, myocardial infarction, congestive heart failure, and contradictory medications

(Dustan et al., 2004; Patrizi et al., 2001). As of 2002, FDA post-market data suggested that death and adverse events can occur in patients classified as medium and high risk. Documented cases of Viagra-related deaths are very rare in the scientific literature. In one case, a 56-year-old Caucasian was found dead after taking four times the therapeutic dose (Tracqui et al., 2002). Viagra is likely to be better tolerated in athletes; however, any use with vasodilators and exercise is cautioned against and should first require consultation with a health care professional. When combined with other drugs Viagra could become harmful in athletes and thus its use should be limited to legitimate medical needs.

Ethical Barriers

Should athletic performance be a sufficient reason to prescribe Viagra, new guidelines by the FDA would need to be drafted. Physicians, health care professionals, and the sports industry will require additional training about its efficacy and safety considerations with exercise. Ethical issues, especially from professional athletic organisations, may arise if it is classified as a performance-enhancing device.

The *New York Daily News* stated that Viagra is already commonly used in sports such as baseball, and is recommended amongst athletes due to its beneficial effects (Thompson, Red, O'Keefe, & Vinton, 2008). The *Atlantic Wire* asked NFL players about Viagra's role in professional sports, and Brandon Marshall, a Chicago Bears receiver, stated that he had heard of other players using it to acquire a competitive edge (Wagner, 2012).

Some agencies may wish to halt its acceptance into athletics: the World Anti-Doping Agency is currently funding a study to examine Viagra's claimed performance enhancing effects ("World Anti-Doping," 2008). This could bring tough ethical dilemmas to training athletes. Should Viagra be added to the list of prohibited substances, athletes who require Viagra for a healthy sexual lifestyle may be forced to choose between a healthy sex life and an athletic career.

Conclusions

Viagra does not improve performance and its use can endanger one's health. In healthy men, Viagra may lower resting blood pressure and improve lung gas exchange. Recent studies show mixed results as to whether any improvement does occur and remains inconclusive. In hypoxic environments, Viagra helps reduce Pulmonary Hypertension and recovery time. More research is needed to fully determine the extent to which Viagra modifies an athlete's body. The ethical implications in the athletic world are issues that should be formally addressed and athletes who require Viagra for their

sexual lifestyle may face future inequity. Viagra administration should always be done under the supervision of a health care professional and should have a legitimate medical need as it can have adverse health effects.

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