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Editorial

# Absence of Reliable Screening Methods That Prove the Use of Gene Doping in Sports [1]

Ausencia de métodos de tamizaje fiables que demuestren el uso del dopaje genético en el deporte

Falta de métodos de triagem confiáveis para provar o uso de doping genético no esporte

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## Resumen:

El deporte eleva el nivel de actividad física humana dentro de los límites de los rasgos genéticos. Los resultados de la terapia génica han atraído a algunos a pensar en utilizar sus tecnologías para crear un 'atleta indomable'. La Agencia Mundial Antidopaje (AMA) aplica procedimientos de pruebas genéticas inciertos para establecer casos de este tipo de dopaje. Sin embargo, si los resultados de estos procedimientos son dudosos, entonces la duda debe interpretarse a favor del atleta en cuestión.

Palabras clave: atletas, desempeño físico, dopaje genético, detección de dopaje genético, marcadores genéticos, Agencia Mundial Antidopaje, beneficio de la duda.

## Abstract:

Sport raises the level of human physical activity within the limits of genetic traits. The results of gene therapy have attracted some to think of using its technologies to create an “indomitable athlete.” World Anti-Doping Agency (WADA) applies uncertain genetic testing procedures to establish cases of this type of doping. Yet, if the results of these procedures are doubtful, then doubt must be interpreted in favor of the athlete concerned.

Keywords: athletes, physical performance, gene doping, gene doping detection, genetic markers, World Anti-Doping Agency, the benefit of the doubt.

## Resumo:

O esporte eleva o nível da atividade física humana dentro dos limites dos traços genéticos. Os resultados da terapia genética têm atraído alguns a pensar em usar suas tecnologias para criar um "atleta indomável". A Agência Mundial Antidoping (WADA) aplica procedimentos incertos de testes genéticos para estabelecer casos deste tipo de dopagem. Entretanto, se os resultados desses procedimentos forem incertos, então a incerteza deve ser interpretada em favor do atleta em questão.

Palavras-chave: atletas, desempenho físico, doping genético, detecção de doping genético, marcadores genéticos, Agência Mundial Anti-Doping, benefício da dúvida.

Some have gone so far as to claim that sportspeople are ordinary individuals who are born and trained to be elite. These writers acknowledge that figure and other corporeal structural traits favor performance in specific sports modalities; however, they emphasize that physical training attendance is a significant element that can outweigh any genetic impact (Dias, 2011). Nonetheless, it is unlikely that this hypothesis correlates to the fact because humanistic physical performance is known as a multifactorial Phenotype, meaning that it is influenced by the interaction of different environmental circumstances and depends on hereditary elements (Dias, 2011).

In the third millennium, genetic engineering technologies provided notable contributions to sports' reality. They were involved in supporting the expansion of sports-related domains (Shen & Liang, 2021). In

contrast, gene doping indicates the non-curative employment of gene treatment by intact athletes to boost somatic performance in sporting contests. Gene doping could have serious, even deadly consequences, as the knowledge of gene remedy remains in its infancy (Ginevičienė et al., 2022).

Legally speaking, acts of doping and gene doping in sports violate national legislation just as they do with provisions of the World Anti-Doping Code. However, doping acts of taking and giving prohibited substances in their traditional forms leave metabolic and notable traces in the blood and urine of athletes who use them; thus, proving their occurrence is not difficult (AL-Dafrawi et al., 2019). In contrast, nothing enters the bloodstream or is left in the urine with Gene Doping (AL-Dafrawi et al., 2019).

This is particularly the case for the current, imprecise, and uncertain genetic modification screening procedures in place by the World Anti-Doping Agency to establish cases of this type of doping, which often fail to demonstrate it.

In short, if something cannot be materially shown to have occurred, no one may be held ethically or legally responsible for its effects (AL-Dafrawi, 2018).

The general rule of proof in criminal cases is that evidence should be established in crimes by all means of proof, and the judge shall rule according to his emotional conviction (Ahmad, 2012). The principle of presumption of innocence prevails in the context of proof in criminal matters; the principle of doubt is interpreted in the interest of the accused; and the principle of the burden of proving the occurrence of the crime falls on the Public Prosecution (Ahmad, 2012). Notwithstanding, we find that the evidence system in civil matters accepts the idea of defining the means of proof, the idea of assuming error and assuming the person's responsibility for the error of others, and accepts the idea of shifting the burden of proof (Ahmad, 2012).

I am writing this editorial letter because I am concerned about two problems. First, in the vast majority of situations, gene doping-derivative proteins produced in the body of the athlete would be undetectable from internal proteins (de Boer et al., 2019). There is an objective difficulty in distinguishing between two proteins, the first produced by genetically modified cells and the second by cells not subject to genetic modification or manipulation. This is exactly what can be concluded according to the opinion of experts in the field of Biomedical Ethics.

And second, World Anti-Doping Agency applies a legal criterion characterized by looseness and weakness to prove gene doping cases, which is the criterion of "Comfortable satisfaction" that is much lighter than the "Without Reasonable Doubt" Criterion. The Article No. 3.1 of the Agency's code states the following:

"The Anti-Doping Organization shall have the burden of establishing that an anti-doping rule violation has occurred. The standard of proof shall be whether the Anti-Doping Organization has established an anti-doping rule violation to the comfortable satisfaction of the hearing panel, bearing in mind the seriousness of the allegation which is made. This standard of proof in all cases is greater than a mere balance of probability but less than proof beyond a reasonable doubt. Where the Code places the burden of proof upon the Athlete or other Person alleged to have committed an anti-doping rule violation to rebut a presumption or establish specified facts or circumstances, except as provided in Articles 3.2.2 and 3.2.3, the standard of proof shall be by a balance of probability," (World Anti-Doping Code 2021, 2021). Notwithstanding, in Iraq, the legislator chose to remain silent, as there is not even a single legislative text in the Iraqi Penal Code No. 111 of 1969 and its amendments that criminalizes or punishes gene doping actions (Ahmad, 2012).

Now, this editorial letter contains the concept of two principles:

- Balance of probability
- *Preuve hors de tout doute raisonnable* or beyond a reasonable doubt

The 'benefit of the doubt' is a fundamental precept in every common law structure. It is wielded in its everyday sense, that is, to suppose something positive about an individual rather than something negative when there is no hard or clear evidence either way. However, the idea should be comprehended in relevance

to three other exceptional special legal connotations: standard of proof, the burden of proof, and credibility. In criminal contexts, the "benefit of the doubt" resides in the connection of the bilateral opposition to the concept of "reasonable suspicion" (Good, 2016).

Finally, it must be emphasized that genetic testing examples in sports are infrequent, yet they do exist (Patel & Varley, 2019). Not to mention that proving gene doping cases, for the time being, is a figment of the imagination (AL-Dafrawi et al., 2019).

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## Notes

1 This contribution is related to a previous work towards a PhD degree.