



Implementation of The Whereabouts System to Prevent Doping in Bodybuilding in Indonesia

Junaedi¹, Junaidi², Wahyuningtyas Puspitorini³

^{1,2,3}Universitas Negeri Jakarta, Jl. R.Mangun Muka Raya No.11, RT.11/RW.14, Rawamangun, Kec. Pulo Gadung, Kota Jakarta Timur, Daerah Khusus Ibukota Jakarta 13220

e-mail: junaedi020481@gmail.com

Abstract

Doping threatens the integrity of bodybuilding in Indonesia, while limited athlete knowledge complicates the implementation of anti-doping regulations. This study examined the implementation and optimization of the Whereabouts system for preventing doping among bodybuilding athletes. A qualitative descriptive case study was conducted at the Jakarta provincial branch of the Indonesian Bodybuilding and Fitness Association. Data were obtained through in-depth interviews with ten athletes and a review of relevant literature and documents, and were analyzed thematically. The findings showed limited understanding of the Registered Testing Pool and the Whereabouts system. Most athletes reported receiving little formal anti-doping education and relied primarily on coaches for information. Nevertheless, they strongly supported consistent monitoring and unannounced out-of-competition testing to promote fair competition. Implementation challenges included perceived limitations in institutional proactivity, inconsistent case handling, and digital literacy. The study concluded that support for the system had not been matched by adequate operational knowledge. Recommended strategies included structured implementation, continuous athlete and coach education, stronger collaboration among anti-doping organizations and sport federations, and protection of athletes' personal data. The study contributed context-specific implementation strategies connecting education, monitoring, and data protection in Indonesian bodybuilding.

Keywords: Whereabouts System; Doping; Bodybuilding; IADO; Implementation Challenges.

corresponding author: junaedi020481@gmail.com

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A. Introduction

Doping in sport has become a controversial and complex issue involving ethics, regulation, and practices in the field (IADO, 2023). The use of prohibited substances to enhance athletic performance conflicts with sportsmanship and honesty in competition and can seriously compromise organ function and athletes' overall health (Harahap et al., 2025; Mylsidayu, 2024).

In Indonesia, doping remains a serious concern among athletes. Evidence indicates that doping is a significant issue in particular sports, as reflected in numerous cases at national competitions in which athletes tested positive for prohibited substances such as anabolic steroids (Sinduro & Setyanto, 2024). Several factors contribute to this phenomenon, including the intention to use anabolic androgenic steroids (AAS) (IADO, 2021), which can be explained by attitudes, subjective norms, and perceived behavioral control (Shine Pintor, Dharmmesta, & Sahid Susilo Nugroho, 2016; Aldida, M. Bertu, 2024). Pressure to achieve, intense competition, pressure from coaches or teams, and financial factors are major drivers of prohibited substance misuse. Limited athlete knowledge and awareness of the risks and consequences are also important factors (Gemilang & Astuti, 2024; Mylsidayu, 2024). Research has indicated that Indonesian athletes' understanding of anti-doping rule violations (ADRV) was

predominantly low (37%) (Susanti, 2023), while overall anti-doping knowledge tended to be low (65%) (Gemilang & Astuti, 2024; Organization & Indonesia Anti-Doping Organization, 2023).

To address doping, the Indonesia Anti-Doping Organization (IADO), as the national anti-doping body, has implemented regulations and monitoring mechanisms aligned with World Anti-Doping Agency (WADA) standards (World Anti-Doping Agency, 2007; Anam, 2025). A crucial instrument in WADA's anti-doping program is the Whereabouts system, which requires athletes in the Registered Testing Pool (RTP) to provide information about their location so that they can undergo out-of-competition testing (OOCT) (Valori & Valori Guido, 2017; Valori Guido, 2017; WADA, 2025). Three missed tests or filing failures within a 12-month period constitute an anti-doping rule violation that may result in a ban of up to two years (Dikic, Samardzic Markovic, & Namee, 2011; Valori & Valori Guido, 2017; WADA, 2025).

Despite its importance, the Whereabouts system faces challenges, including uneven access to education, limited anti-doping testing facilities, and personal data protection concerns arising from the use of digital platforms such as the Anti-Doping Administration and Management System (ADAMS) to manage sensitive athlete data (Ramadhani, 2022).

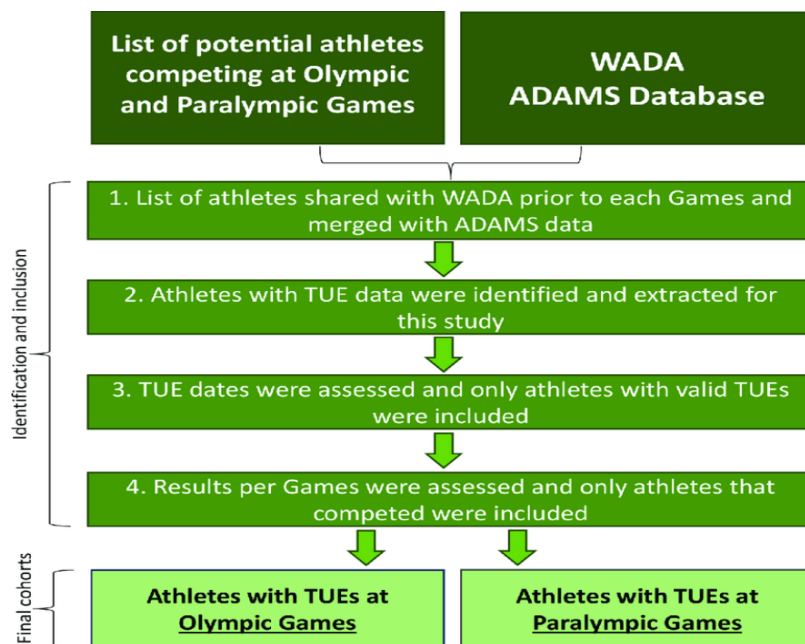


Figure 1. Therapeutic Use Exemption (TUE) Flowchart

Source: Vernec, Healy, Banon, and Petróczi (2024).

Given the high prevalence of doping, the crucial role of the Whereabouts system in prevention, and the complex challenges associated with education and personal data protection, this study is particularly relevant and timely. A deeper understanding is needed of how the system can be implemented optimally and how effective educational strategies can improve both knowledge and compliance while protecting athletes' personal data.

Theoretical Foundations

This study elaborates the key concepts within its main focus and subfocuses, providing a theoretical foundation for understanding the implementation of the Whereabouts system in doping prevention.

1. Doping and Bodybuilding Athletes

Doping is defined as the use of prohibited substances and/or methods to enhance athletic performance, as well as any violation of anti-doping rules (Susanti, 2023). Doping is a complex issue involving sporting integrity, ethics, and athlete health (Sinduro & Setyanto, 2024; Mylsidayu, 2024). In Indonesia, doping cases have been particularly prominent in bodybuilding, with numerous confirmed violations involving bodybuilders at national competitions such as the 2016 National Sports Week (PON XIX) and the

2021 Papua PON, where AAS use was frequently identified (Aldida, M. Bertu, 2024). Bodybuilders commonly misuse AAS to increase muscle mass (Aldida, M. Bertu, 2024). Research indicates that Indonesian bodybuilders' intention to use AAS can be explained by attitudes, subjective norms, and perceived behavioral control, highlighting the complexity of the factors underlying doping behavior (Shine Pintor et al., 2016; Gemilang & Astuti, 2024). Bodybuilding requires the development of a muscular and aesthetically balanced physique, creating distinctive challenges for doping prevention (Akbar & Abidin, 2015; Shine Pintor et al., 2016; Aldida, M. Bertu, 2024; WADA, 2025).

2. Characteristics of Bodybuilding

Bodybuilding is a sport based on physical appearance that emphasizes muscular development and aesthetic presentation. Success is defined by outstanding achievement. Bodybuilders have different ideal body composition targets from other athletes because the proportion of muscle mass is especially important. Achieving the desired physique and body composition requires substantial nutritional intake and specific dietary

regulation, intensive training involving resistance or weight exercises, adequate rest, discipline, patience, and commitment. The drive to achieve and compete is strong, and achievement is understood as a source of pride. Pressure to succeed, external pressure from coaches, the Indonesian National Sports Committee (KONI), or government, and competition-related stress can influence athlete behavior. Financial constraints may encourage shortcuts through doping, particularly when combined with impatience. Social environments, including gym communities, can shape attitudes and behavior, while coaches exert considerable influence over athletes.

3. Athlete Knowledge and Compliance

Knowledge consists of information integrated with understanding and the capacity to act. In anti-doping, athlete knowledge includes understanding ADRV, prohibited substances, health risks, and doping control procedures. Compliance refers to observing established rules and requirements. Studies indicate that anti-doping knowledge among Indonesian athletes tended to be low (65%), and understanding of ADRV was predominantly low (37%). Nevertheless, understanding of the use of the Whereabouts application was reported to be relatively high (46%). Drivers of doping include achievement pressure, intense competition, coach or team pressure, financial factors, and insufficient education and awareness of risks and consequences. Doping can seriously affect athlete health through heart disease, hormonal disorders, and organ damage, and can harm careers through loss of sponsorship and reputational damage. Anti-doping education can improve knowledge, attitudes, moral awareness, and confidence. Sport psychologists play an important role in providing psychological support to prevent repeated doping incidents.

4. Managing the Whereabouts System for Doping Prevention

WADA developed ADAMS in 2005 as an online management database for anti-doping information. The Whereabouts system is an important component of anti-doping programs. It requires athletes in the RTP to provide accurate and complete information about their location periodically, usually every quarter. Athletes must specify a daily 60-minute time slot and a location where they can be available for testing. Three Whereabouts failures, comprising filing failures, missed tests, or a combination of both within twelve months, constitute an anti-doping rule violation and may trigger legal proceedings with bans of up to two or four years. The Whereabouts system is connected with other programs, including the Athlete Biological Passport (ABP). Although it aims to improve testing effectiveness, implementation faces challenges involving athletes' privacy rights and personal data protection in systems such as ADAMS. Practical issues include defining reasonable efforts by doping control officers (DCOs), the effectiveness of communicating violation notices, and news coverage that may harm athletes.

5. Effective Educational Strategies

Anti-doping education aims to improve athlete awareness and understanding. Sport psychologists have an essential role in providing comprehensive education on the risks and consequences of prohibited substance misuse, anti-doping policies, sporting ethics, and legal consequences. Educational strategies should be comprehensive, provide clear information, and emphasize fair play. Education can be complemented by psychological support, stress management, and career guidance. Uneven educational provision across regions remains a major challenge in Indonesia. IADO seeks to provide

intensive education supported by innovative media, including public service announcements and social media campaigns addressing forms of doping, supplement use, health risks, laws, and sanctions.

6. Using ADAMS and Protecting Personal Data

The effectiveness of the Whereabouts system depends heavily on digital platforms such as ADAMS for athlete data administration and management. However, these platforms raise serious personal data protection concerns, particularly regarding sensitive information such as health records. The source manuscript identifies significant gaps in Indonesia's draft Personal Data Protection Law, including insufficient detail on data protection principles and the absence of an independent data protection authority. Under these conditions, implementation would depend substantially on individuals' knowledge and active efforts to protect their personal data. IADO is responsible for adopting and implementing anti-doping regulations in accordance with the WADA Code. WADA provides a ten-step tutorial for entering Whereabouts information in ADAMS 3.0, covering mailing addresses, overnight accommodation, competitions, regular activities, the daily 60-minute time slot, attachments, and the submission and updating of Whereabouts information.

7. Athlete Sanctions, Collaboration, and Testing

IADO imposes sanctions on athletes found to have committed doping violations, including four-year competition bans for consuming prohibited substances or evading or refusing to provide samples. The data indicate that bodybuilders are among the most frequent violators. IADO collaborates with sporting and government institutions, including KONI, the Ministry of Youth and Sports (Kemenpora), and the National Narcotics

Agency (BNN), to implement effective anti-doping programs. It participates in collecting urine, blood, and dried blood spot (DBS) samples during both in-competition (IC) and out-of-competition (OOC) testing. Samples are analyzed by WADA-accredited laboratories, with data managed through ADAMS. The source manuscript notes that Indonesia did not have a WADA-accredited laboratory, meaning that testing often had to be conducted abroad at considerable expense.

B. Methods

This study seeks an in-depth understanding, or *Verstehen*, of a phenomenon and the meaning of human experience. Its principal aim is to explore and understand the central issue under investigation: how the Whereabouts system can be implemented optimally while addressing gaps in athlete knowledge.

Research Design

The study uses a qualitative method with a descriptive case study approach. This approach enables an in-depth exploration of a bounded system through multiple sources of information. Qualitative research emphasizes a detailed understanding of social contexts and human behavior, producing contextual and rich descriptions.

Research Setting and Schedule

The study was conducted at the Jakarta provincial branch of the Indonesian Bodybuilding and Fitness Association (PBFI). This setting was selected to maintain participant homogeneity and allow an in-depth examination of the experiences and specific characteristics of a group with similar attributes. The choice was important for obtaining firsthand data and understanding the context holistically. The study was scheduled for July 2025.

Data and Data Sources

The study uses both primary and secondary data.

1. **Primary Data Sources:** Primary data come directly from ten selected bodybuilding athletes with relevant experience of doping issues or anti-doping systems. Through in-depth interviews, they provide firsthand information about drivers of doping, psychological experiences, and perceptions of existing systems. Selection criteria include status as a bodybuilding athlete in Indonesia, particularly within PBFI Jakarta, experience competing at national or international level, and willingness to participate.
2. **Secondary Data Sources:** Secondary data are obtained from journal articles, books, research reports, national and international anti-doping regulations issued by WADA and IADO, and case studies. These sources provide theoretical context and background information.

Data Collection Techniques

To develop a detailed understanding of athlete experiences and perceptions and obtain contextual information, the study uses the following techniques:

1. **In-Depth Interviews:** Interviews were conducted with ten selected bodybuilding athletes. This technique allows sensitive topics to be explored flexibly and in depth through open-ended questions about personal perspectives. The interview framework addresses knowledge of RTP and ADAMS/Whereabouts, the effectiveness of IADO education, doping prevention through RTP, and feedback on IADO programs.
2. **Literature and Document Review:** Data are collected from literature and documents concerning doping, anti-doping regulations, psychological implications, and anti-doping management systems. This technique helps establish context and validate interview findings.

3. **Observation (Optional/Supporting):** Where feasible, observation is conducted in training environments or PBFI-related activities to provide a visual understanding of the social context and settings in which athletes operate.

Data Analysis Procedures

Qualitative analysis is iterative and begins when the first data are collected. Its stages include:

1. **Data Collection and Transcription:** Interviews and document reviews are followed by verbatim transcription of interview recordings.
2. **Data Reduction:** The data are read repeatedly, selected, simplified, abstracted, and transformed. This process includes coding and identifying relevant patterns, themes, and categories.
3. **Data Display:** Data are organized into matrices, diagrams, and narratives to facilitate understanding and further analysis of patterns and relationships among themes.
4. **Conclusion Drawing and Verification:** Preliminary conclusions are drawn from emerging patterns and themes and remain provisional and subject to refinement. Verification involves reviewing the original data, comparing sources through triangulation, and seeking supporting evidence.

Data Analysis and Validity

Data analysis focuses on the following approaches:

1. **Thematic Analysis:** Data are organized and interpreted to identify relevant patterns and formulate findings.
2. **Qualitative Analysis:** Validation of the interview instrument emphasizes data accuracy, credibility, and trustworthiness. These are strengthened through prolonged

engagement, persistent observation, source and method triangulation, peer discussion, member checking, and reference materials.

3. **Descriptive Analysis:** The quality of interview questions is assessed through validation by three experts: a Whereabouts specialist or anti-doping educator, a research methodology expert, and a bodybuilding coaching expert.
4. **Content Analysis:** Documents and literature are analyzed to identify key information, concepts, regulations, and previous research findings.
5. **Cross-Case Analysis:** Themes and patterns from individual athletes are compared to identify similarities and differences.

To ensure qualitative research quality, the study applies credibility, associated with authenticity; transferability, concerning the applicability of findings to other contexts; dependability, concerning the consistency of the research process; and confirmability, concerning the extent to which findings are grounded in data rather than researcher bias.

C. Result and Discussion

Result

This section presents an overview of the research setting, the principal findings from athlete interviews, and a detailed discussion of their implications.

1. Doping in Indonesian Bodybuilding

Doping is a significant issue among Indonesian bodybuilders. At the 2016 National Sports Week (PON XIX) in West Java, eight of the twelve athletes implicated in doping were bodybuilders. Similar cases occurred at the 2021 Papua PON, where bodybuilders tested positive for anabolic steroids. AAS are commonly misused by bodybuilders to increase muscle mass. Intentions to use AAS among Indonesian bodybuilders can be explained by attitudes, subjective norms, and perceived behavioral

control. Achievement pressure, intense competition, pressure from coaches or teams, and financial factors are major drivers of prohibited substance misuse. Limited athlete knowledge and awareness of the risks and consequences are also important factors. Indonesian athletes' understanding of ADRV was predominantly low (37%), while overall anti-doping knowledge tended to be low (65%).

2. Characteristics and Daily Lives of Bodybuilding Athletes

Bodybuilding requires athletes to develop a muscular and aesthetically balanced physique and display it through specific posing movements. These distinctive characteristics, together with competitive pressure and performance perceptions, create particular challenges for doping prevention. Bodybuilders' daily lives are demanding, and preparation has been described as a 24-hour commitment. This includes:

- a. **Training and Nutrition:** Bodybuilders must closely regulate calorie, fat, and protein intake and maintain consistent eating and training routines throughout the day (Mujibuddin et al., 2024).
- b. **Mental Resilience and Discipline:** Athletes need mental resilience to cope with competitive pressure and sustain discipline. They understand the importance of avoiding prohibited substances and exercising caution with supplements that may appear harmless.
- c. **Coaches' Role:** Coaches have a crucial role in monitoring and guiding athletes during preparation and before and during competitions. In addition to training and nutrition advice, they provide education and new information about prohibited substances and how to avoid them,

often informally.

- d. **Challenges and Risks:** Many bodybuilders face the temptation to take shortcuts or seek immediate success. Doping can undermine sporting integrity, discredit achievements, and endanger athlete health, potentially leading to premature death.

Research Findings

1. Athlete Knowledge of Anti-Doping Systems (RTP, ADELS, and Whereabouts/ADAMS)

Most athletes demonstrated very limited understanding of, or no familiarity with, the RTP concept or the ADELS application. Although some had registered with ADELS as a PON requirement, they did not fully understand RTP functions or implications. Only two athletes, Selamat Junaidi and Sahri, had a general understanding. Almost all reported that they did not know about, or had never heard of, ADAMS or the Whereabouts system. Selamat Junaidi had read information and entered data but had never received comprehensive education on the ten steps for periodic Whereabouts reporting. This knowledge gap is consistent with sources reporting generally low anti-doping knowledge among Indonesian athletes.

2. Anti-Doping Education Received by Athletes

Most athletes consistently stated that they had never received formal seminars or training directly from IADO or KONI on doping, health risks, regulations, or systems such as RTP and Whereabouts. One athlete, Sutrisno, learned from a role model; Sahri studied independently through the WADA application; and some others obtained information about prohibited substances through word of mouth. This limited formal provision was compounded by uneven access to anti-doping education across districts and

municipalities.

Coaches were the main source of doping-related information and guidance. Their information often lacked detail or access to the official Prohibited List updated by WADA and IADO. Athletes generally had not accessed the IADO website directly to consult the list.

Despite limited educational provision, athletes expressed a strong desire for training and a better understanding of anti-doping, prohibited substances, and their consequences.

3. Challenges in Implementing the Whereabouts System for Doping Prevention

Some athletes considered RTP registration reasonably effective as an initial PON requirement because a positive test would threaten their careers. However, most athletes and coaches believed that the existing implementation was insufficiently effective because IADO had not monitored and implemented the Whereabouts system proactively and comprehensively. They viewed it as largely existing on paper, without concrete follow-up in the field.

Athletes fully supported optimal implementation involving strict and consistent monitoring and actual unannounced out-of-competition testing. They believed it would promote cleaner and more honest competition. Athletes such as Selamat Junaidi and Rudi Ramadhan stated that they were ready to be tested at any time if the system was genuinely implemented.

Coaches suggested that IADO tended to act like a traffic police officer by imposing sanctions without adequate and proactive education. Complaints concerned delayed test results and inconsistent handling of doping cases. Limited digital literacy also hindered some athletes' access to applications.

Table 1. Athlete Profiles

Athlete	Age	Career duration	Achievement
Andika	38	10	National Championship
Dedie	23	5	PON
Jujun	40	23	National Championship
Slamet Junaedi	40	19	PON
Rudi Romadon	48	15	PON
Sutrisno	40	10	National Championship
Ujang Firmansah	46	20	National Championship
Zainal	33	11	National Championship
Ansori	40	11	PON
Sahri	48	19	PON

Source: Google Form data.

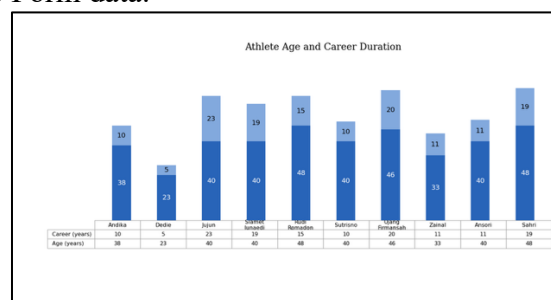


Figure 2. Athlete Age and Career Duration

Discussion

1. Knowledge of RTP, ADELS, and Whereabouts

The principal findings show a substantial knowledge gap among Jakarta bodybuilders concerning core anti-doping concepts such as RTP, ADELS, and Whereabouts/ADAMS. Most did not understand these terms or had only recently encountered them. Even experienced athletes who had previously entered data did not understand the complete operational procedures. This partly contrasts with Dewi Putri Susanti's (2023) study, which reported relatively high understanding of the Whereabouts application (46%), but is consistent with its findings of generally low anti-doping knowledge (65%) and limited understanding of ADRV (37%). The results suggest that knowledge gaps concern not only rules but also essential preventive instruments such as the Whereabouts system itself.

2. Effectiveness of IADO Anti-Doping Education

Athletes consistently reported that they had never received comprehensive education or direct seminars from IADO concerning RTP, Whereabouts, or the Prohibited List. The information they received was often sporadic or depended heavily on coaches. This is consistent with Mohammad Choirul Anam (2025), who argued that anti-doping regulations had not been fully effective because monitoring was weak and education insufficient. Other research also emphasizes uneven anti-doping education across Indonesian districts and municipalities, with many cases linked to athletes' lack of knowledge when using supplements. The findings highlight shortcomings in directly and comprehensively reaching athletes, creating a substantial gap in doping prevention.

3. Perceptions of the Whereabouts System as a Solution

Although detailed knowledge of the application remained limited, athletes

generally expressed positive views and strong support for effective implementation. They agreed that monitoring and concrete action, such as unannounced testing, could make the system effective in preventing doping by encouraging greater caution. They emphasized the need for tangible action by IADO beyond written requirements or regulations and considered it a means of achieving honest and clean competition. These perceptions are consistent with the high prevalence of doping in bodybuilding reported in Indonesia, including eight of twelve athletes implicated at PON XIX in 2016 and cases at the 2021 Papua PON. The reported finding that bodybuilding accounted for 60% of doping results in IADO results management further reinforces the need for preventive solutions. The system's unannounced testing mechanism is considered crucial for discouraging doping behavior.

4. Strategic Solutions for Doping Prevention through Whereabouts

The novelty of this study lies in its detailed examination of implementation and optimization in the specific context of Indonesian bodybuilding, which had received limited in-depth attention. Previous research tended to describe doping problems or general knowledge levels rather than context-specific implementation strategies. Given the consistently limited understanding of Whereabouts and the lack of direct IADO education, prevention strategies should address the following dimensions:

- a. **Active and Structured Implementation:** IADO should activate and consistently implement planned, real-time Whereabouts monitoring rather than treating it solely as an administrative requirement. WADA-accredited anti-doping testing facilities are also needed at regional level.
- b. **Comprehensive and Continuous Education:** IADO should develop

structured education on Whereabouts and anti-doping, covering detailed ADAMS procedures, reporting compliance, consequences of violations, the Prohibited List, and supplement risks. Education should use multiple formats and reach provincial and club levels through cooperation with federations such as PBFI. Coaches' roles as educators and mentors should be strengthened through access to current information and materials from IADO. Awareness of personal data protection implications associated with platforms such as ADAMS should also be improved.

- c. **A Holistic and Collaborative Approach:** Prevention requires more than sanctions: it also needs early education, stronger monitoring, and psychological support to help athletes cope with pressure. Collaboration among IADO, sporting federations, and coaches is essential to ensure targeted and adaptable education and monitoring suited to bodybuilding's distinctive characteristics. IADO should act as an educator and mentor rather than solely as a traffic police officer imposing sanctions.

D. Conclusion

The study found that bodybuilders' knowledge of anti-doping systems, particularly the Registered Testing Pool (RTP) and ADAMS/Whereabouts, remained limited. Athletes reported insufficient formal education from IADO and relied largely on sporadic information from coaches or reading materials that lacked operational guidance. Nevertheless, they strongly supported consistent monitoring and unannounced testing as measures to promote clean and fair competition. These findings highlight a gap between athletes' willingness to

comply and their understanding of reporting requirements. The study contributes context-specific implementation strategies that integrate education, monitoring, institutional collaboration, and personal data protection. However, athletes' positive perceptions should not be interpreted as evidence that the system's effectiveness in reducing doping has been demonstrated.

Effective implementation requires coordinated action by IADO, government institutions, sporting federations, universities, coaches, and athletes. Priorities include continuous practical training on ADAMS and quarterly Whereabouts reporting, accessible information about prohibited substances and supplement risks, digital assistance and reporting reminders, and consistent testing and case management. Government and sporting organizations should strengthen resources, testing facilities, program coordination, and safeguards for sensitive athlete data. Universities and schools can support prevention through curriculum integration, research, professional training, and community outreach, while coaches and multidisciplinary support personnel provide education, nutritional guidance, and psychological support. Public awareness campaigns should extend accurate information to sporting communities and at-risk non-athletes. Together, these measures could improve knowledge and compliance and strengthen sporting integrity, with future research needed to evaluate their effectiveness.

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F. Conflict of Interest

A conflict-of-interest statement was not provided in the source manuscript and should be confirmed by the authors.

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