

Athlete Vulnerabilities Research Project

**DESCRIPTIVE REPORT ON SPORT STAKEHOLDERS'
BELIEFS ABOUT ATHLETE DOPING VULNERABILITIES
AND RELATED FACTORS**

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the WADA Social Science Research Expert Advisory Group**

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Executive Summary

In 2021, WADA, in collaboration with l'Université de Sherbrooke, conducted a survey of stakeholders, specifically personnel of International Federations (IF) and National Federations (NF). The overall objective was to gather information with respect to their perceptions of their athletes' doping vulnerabilities, motivations, sources of knowledge, and related behaviors and beliefs. Although not intended, the same questionnaire was also made available by some of these stakeholders to their athletes, thus allowing a comparison of stakeholder perceptions with athletes' perceptions in their sport. This descriptive report summarizes a number of the survey findings revealed in the first phase of data analysis.

Based on findings of a literature review, a structured questionnaire was developed to assess respondents' insights on several areas related to athletes' vulnerability to doping. Completed questionnaires were obtained from 355 sport organization personnel (coaches/ technical personnel, medical personnel and administrators/ leaders of sport federations) and 219 athletes, a total of 574 respondents from 85 countries and 59 sports. There was some concentration of respondents from a limited number of geographic regions and from several sports which limit the generalizability of some of the results. Nevertheless, these data provide preliminary implications for organizations planning and implementing education programs or other interventions and can be used as comparison data for countries or sports conducting further research in this area.

In relation to doping vulnerability factors, nine were nominated by both sport organization personnel (sport personnel) and athletes as 'most important'. These indicate that anti-doping education efforts need to cover a broad range of topics. A major point of difference between sport personnel and athletes was that 'nutritional supplements' was considered the most important by sport personnel with almost 50% nominating this factor, whereas it was the 6th most frequently nominated factor by athletes and was nominated by just under 20%. Factors related to the physical requirements of sports and psychosocial factors were also highly nominated.

International-level athletes were nominated as the category of athlete most vulnerable to doping, including for inadvertent doping. Athletes at earlier stages of their career and at lower levels of the athlete pathway were nominated as having a higher risk of inadvertent doping than intentional doping. These findings, together with the opinion from sport personnel that nutritional supplements increase vulnerability to doping, indicate that developing behaviors to mitigate such risks needs to be a prominent part of education programs at every stage of the athlete pathway.

Coaches were nominated as the most influential personnel throughout the athlete pathway, particularly at the higher stages, with personal/ social connections (i.e., Parents, Partners and Peers) frequently nominated at lower stages. Educational programs for coaches need to be tailored to ensure they meet their needs, enabling them to provide accurate information and advice to their athletes.

Education was identified as the best way to support athletes who may be vulnerable to doping, along with support beyond traditional education programs, such as nutritional and psychological support.

WADA will continue to collaborate with Université de Sherbrooke in further analyzing the data from the survey as well as supporting other research initiatives related to athlete vulnerabilities to doping.

Acknowledgements

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WADA would like to acknowledge all the respondents to the research survey who took time to complete the questionnaire, providing valuable insight.

WADA would also like to thank the international and national federations, and WADA staff members who promoted and circulated the questionnaire, recognizing the value of such a research study.

1. Overview

WADA's Strategic Plan, '**Leading Anti-Doping in a New Era: 2020-2024**' specifies that research is a key initiative and that such research should 'focus on impactful research based on key priorities and outcomes'. In addition, the Strategic Plan sets 'Being Athlete Centered' as a strategic priority. A key initiative under this priority is on the topic of athlete vulnerabilities, whereby WADA aims to 'identify vulnerable athlete groups to connect, support and recommend appropriate interventions'. WADA will examine a number of ways to support this initiative through the Social Science Research Program. The first phase of this was to engage with l'Université de Sherbrooke who holds the Research Chair on Anti-Doping in Sport, in examining and furthering our understanding of vulnerability factors to doping and the perceptions of our stakeholders on this topic.

In 2021, in collaboration with l'Université de Sherbrooke, a survey was launched by WADA of stakeholders, specifically International Federations (IF) and National Federations (NF). The overall objective was to gather information with respect to their perceptions of their athletes' doping vulnerabilities, motivations, sources of knowledge, and related behaviors and beliefs. Although not intended, the same questionnaire was also made available by some of these stakeholders to their athletes, thus allowing a comparison of stakeholder perceptions with athletes' perceptions in their sport. This descriptive report summarizes several of the survey findings revealed in the first phase of data analysis.

2. Research Study Objectives

The overall aims of the research study were to:

- (i) review the literature with respect to athletes' doping vulnerabilities and related factors;
- (ii) conduct a survey to obtain stakeholders' beliefs about these factors;¹
- (iii) translate the key findings into considerations for anti-doping programs and interventions by stakeholders; and
- (iv) identify areas requiring further research on the topic of athlete vulnerabilities to doping.

This descriptive report focuses on the findings from the survey conducted with WADA stakeholders from the sports movement. The survey was an initial scoping survey of International Federation (IF) and National Federation (NF) personnel familiar with the culture and structure of their sport (sport personnel) – as well as any other individuals who could provide an informed perspective on the vulnerability of athletes in their sport.

¹ As referenced in Section 1 – Athletes were not the original intended recipient of the survey. However, as some sports federations did engage athletes to complete the survey this has allowed a comparative analysis to be undertaken, comparing sports personnel views/beliefs with those of athletes.

3. Survey Method

3.1. The Survey Questionnaire

Based on findings from the literature review, a structured questionnaire was developed to assess the following: (a) what respondents considered to be the most important vulnerability factors and motivations for athletes to dope; (b) perceptions of athletes' knowledge about doping and their major sources of information about doping; (c) perceived doping risk along the athlete pathway; (d) perceived use of banned substances, nutritional supplements and emerging drugs; (e) perceived influence of various athlete support personnel on athletes along the athlete pathway²; (f) beliefs about ways to support vulnerable athletes to prevent doping; (g) beliefs about inadvertent doping.

3.2 Questionnaire distribution

The questionnaire was distributed to IFs to be completed by their personnel familiar with the culture and structure of their sport. They were also asked to distribute the questionnaire to their NFs and to other individuals who could provide an informed perspective on the vulnerability of athletes in their sport. The questionnaire was available online between 23 April and 13 June 2021. Although the questionnaire was intended only for the above personnel, a number of IFs and NFs distributed the questionnaire to athletes.

3.3 The Sample

Completed questionnaires were obtained from 355 sport personnel (coaches/technical personnel, medical personnel and administrators/leaders of sport federations) from 85 countries and 46 sports, and 219 athletes from 30 countries and 35 sports, **a total of 574 respondents from 85 countries and 59 sports.**

Of both sport personnel and athletes, around 70% were affiliated with a national organization and just under 30% were affiliated with an international organization, around 60% represented team sports and just under 40% represented individual sports.

While this broad representation across countries and sports is a strength of the survey, there was some concentration of respondents from a limited number of geographic regions and from several sports. For example, of the 123 Latin American respondents, 80% (99) were from two countries: Argentina (50) and Colombia (49); of the 156 Asia/Oceania respondents 57% were from just two of the 18 countries that responded: India 50, Malaysia 39; of the 128 Team sport athletes, 82% (105) were from just two sports: rugby (55) and field hockey (50); and of the 48 Medical respondents, 50% (24) were from rugby. These concentrations limit the generalizability of some of the results and will require confirmation in further representative samples. Nevertheless, these data provide preliminary implications for organizations planning and implementing education programs or other interventions and can be used as comparison data for countries or sports conducting further research in this area.

² Athlete Pathway refers to the generic athlete pathway that is presented in the Guidelines for the [International Standard for Education](#) and consists of seven broad stages; International-level, National-level, Talented, Youth, Children and School Sport, Recreational athletes and Physical Activity/Fitness. Masters-level athletes were also included as a separate category in this survey.

4. Results

This descriptive report focuses on the summary results for the factors covered in the survey. In most cases the findings are presented for sport personnel and athletes separately.

4.1 Most Important Factors Perceived to Increase Vulnerability to Doping

Respondents were presented with a list of 35 vulnerability factors identified in the literature and asked to nominate three to five that they considered the ‘most important risks for athletes’ in their sport. The perceived most important factors nominated by 15% or more of sport personnel and athletes are shown in Figure 1.

Whilst there is common agreement between sport personnel and athletes on a number of these vulnerabilities, Figure 1 shows that sport personnel are far more likely than athletes to consider the use of nutritional supplements as increasing athlete vulnerability (and particularly medical personnel). Consistent with the overall concept of ‘performance-enhancement’, both athletes and sport personnel nominated physical factors amongst their most important factors (e.g., need for fast physical change; high rate of injury; increased physicality requirement). Psycho-social factors were also frequently nominated (e.g., negative social environment; pressure of expectation; goal orientation).

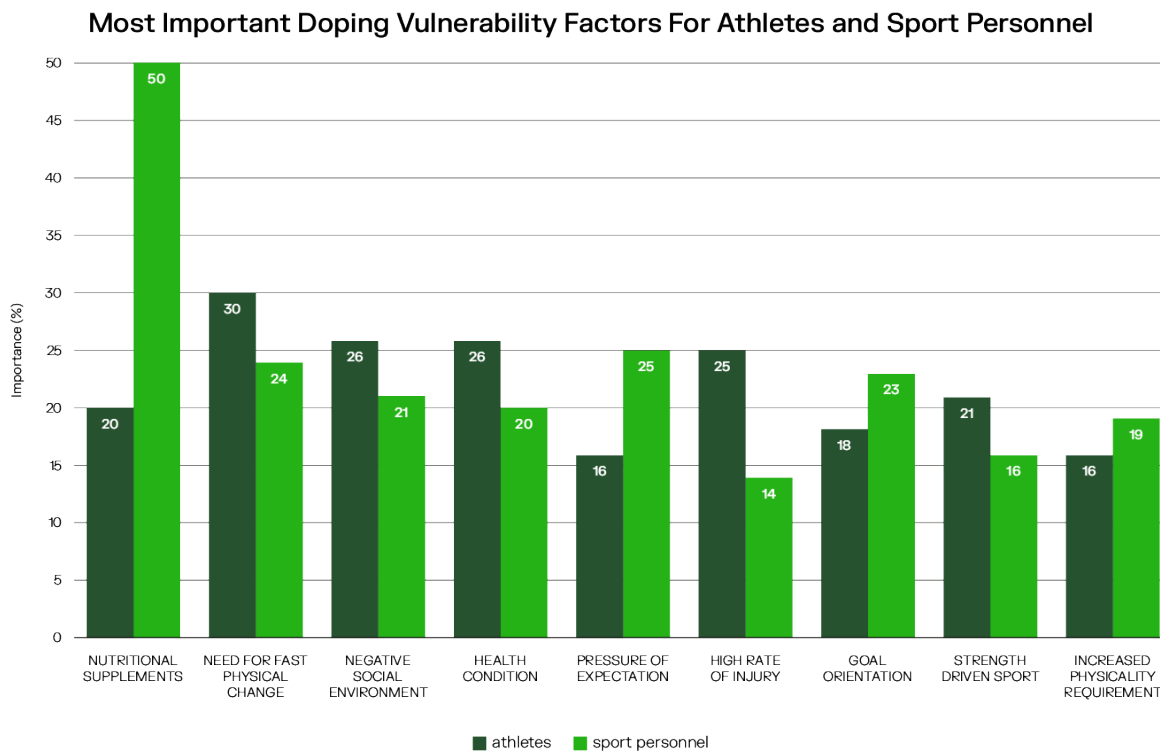


Figure 1: Perceived ‘Most Important’ Doping Vulnerability Factors by Respondent Type

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Nutritional supplements were identified as the most important vulnerability factor by personnel working with sport federations, highlighting the risk of inadvertent doping. The difference between sport federation personnel and athletes may emphasize this further, underlining that athletes may be unaware of the risks of supplement use. This will require further investigation.

Likewise, athletes identifying physical and environmental factors may indicate an insight into vulnerability that sports personnel may not be fully aware of, including the role sports personnel could play in alleviating these pressures through policy, interventions and everyday practice.

4.2 Perceived Risk of Doping at Each Stage Along Athlete Pathway

Respondents were presented with a seven-stage athlete pathway in line with the model athlete pathway depicted in the Guidelines for Education and asked to rate the risk of doping at each stage for male and female athletes in their sport, on a six-point scale from 'no risk' to 'very high risk'. The percent nominating each stage as 'high' or 'very high' risk (the top two categories) are shown in Figure 2a for male athletes and in Figure 2b for female athletes.

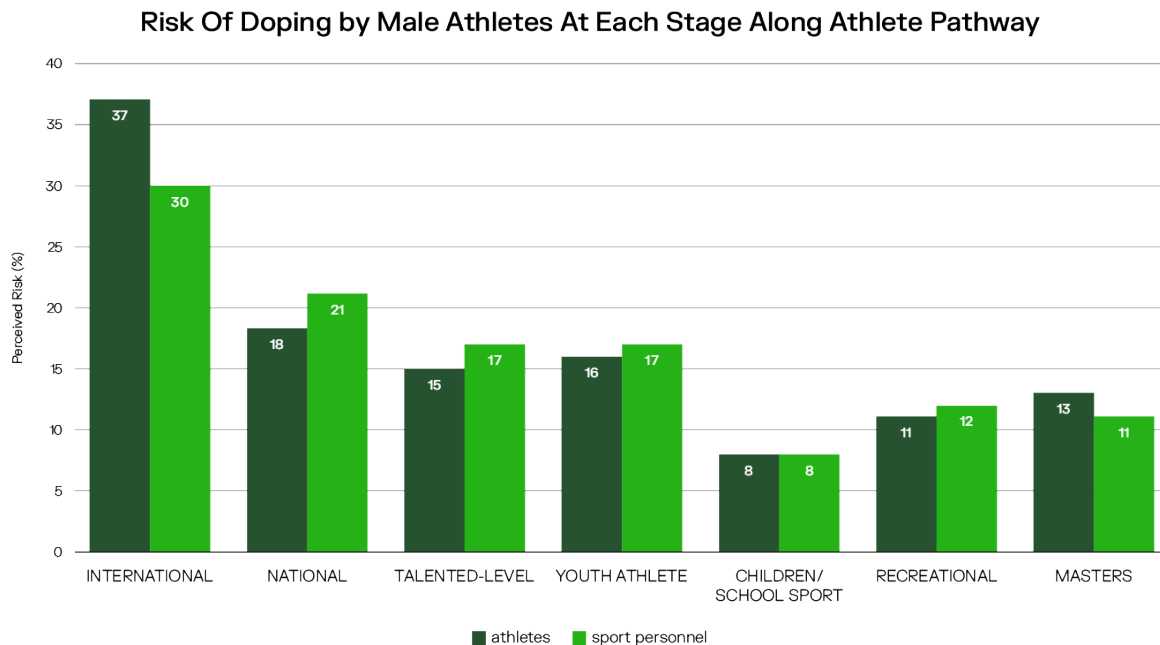


Figure 2a: Perceived Risk of Doping by Male Athletes at Each Stage Along Athlete Pathway

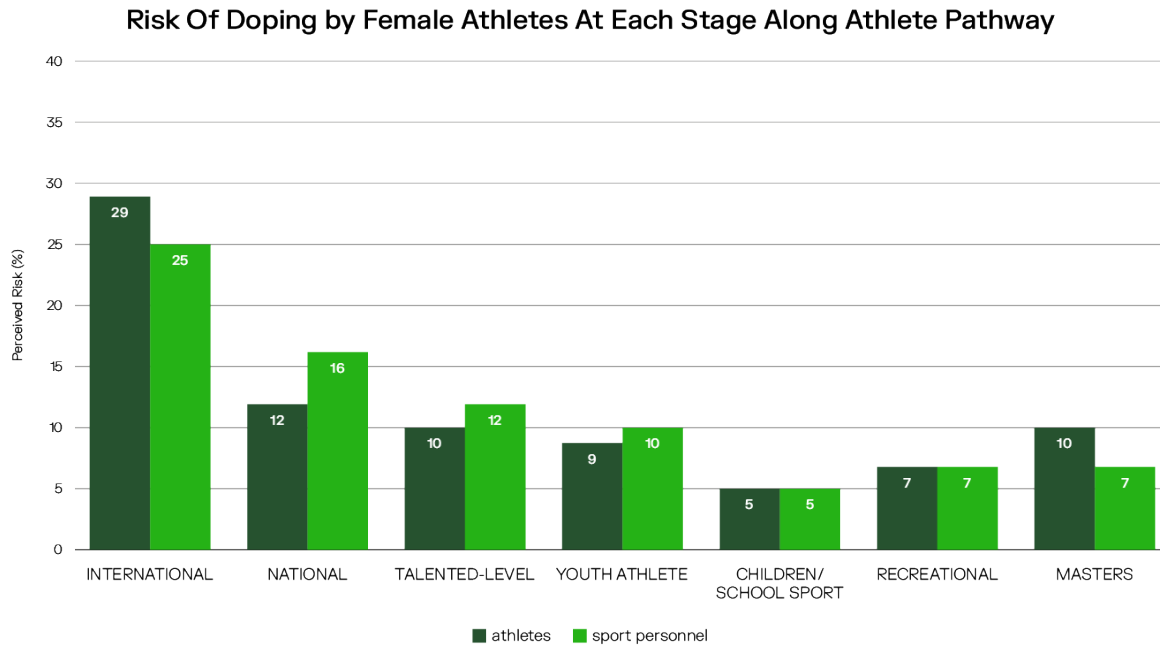


Figure 2b: Perceived Risk of Doping by Female Athletes at Each Stage Along Athlete Pathway

Figures 2a and 2b show that both sport personnel and athletes consider international-level athletes (both male and female) to be at the highest risk for doping. In general, both sport personnel and athletes perceive the risk to increase as the athlete advances up these stages, and that female athletes are at less risk for doping than male athletes. Nevertheless, 25% of sport personnel and 29% of athletes consider international female athletes to be at 'high or very high' risk (compared to 30% and 37% respectively perceiving male athletes to be at 'high or very high' risk).

However, when participants were asked about the risk of *inadvertent* doping at each stage along the athlete pathway, Figure 3 shows a far greater perceived risk than for (intentional) doping at earlier levels on the pathway. This indicates a need for education on inadvertent doping at all stages of the athlete's career.

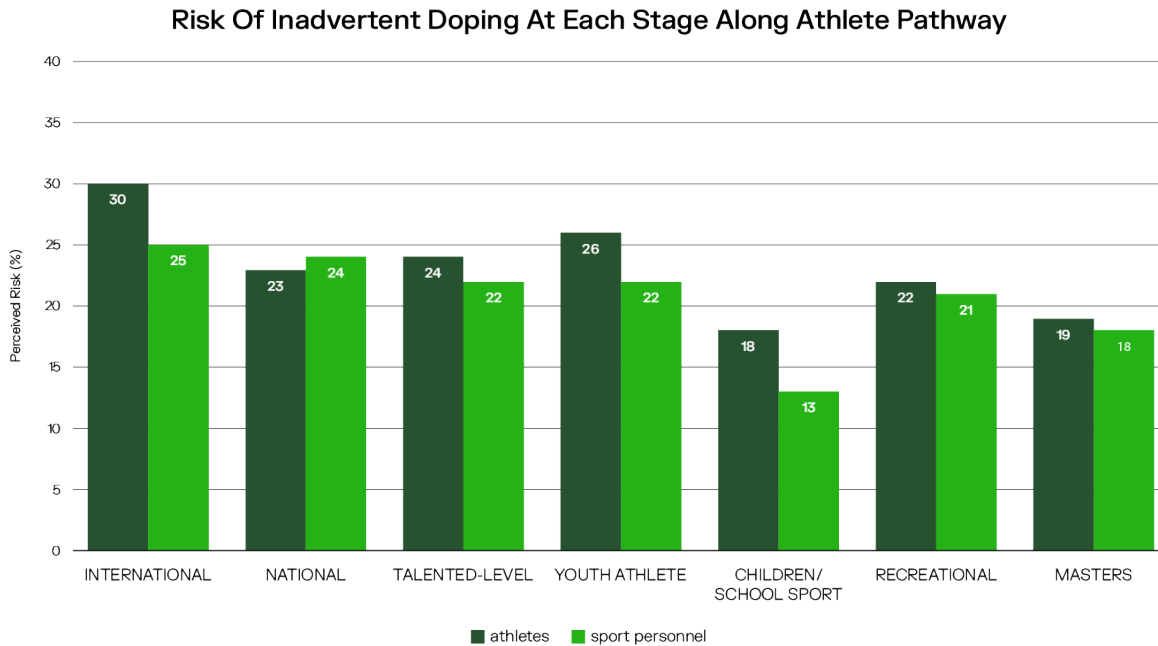


Figure 3: Perceived Risk of Inadvertent Doping by Athletes at Each Stage Along Athlete Pathway

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The risk of inadvertent doping and how to develop behaviors to mitigate such risks needs to be a prominent part of education programs at every stage of the athlete pathway.

4.4 Perceived Most Relevant Motivations for Doping by Athletes in Their Sport

Respondents were presented with the list of nine doping motivations in Figure 4 and asked to rate each one on a six-category scale from ‘do not apply’ to ‘most relevant’ for athletes in their sport. The percent nominating each motivation as either ‘relevant’ or ‘most relevant’ (the top two categories) are presented in Figure 4.

Figure 4 shows general agreement between sport personnel and athletes as to the relevance of these motivations, with all being rated as ‘relevant’ or ‘most relevant’ by at least 20% of sport personnel and athletes. The five ‘most nominated’ relevant motivations for both sport personnel and athletes were performance enhancement, meeting or exceeding expectations, compensating for deficiencies, seeking approval or fame, and financial rewards. However, sport personnel were more likely than athletes to nominate ‘performance enhancement’: 73% vs 57%.

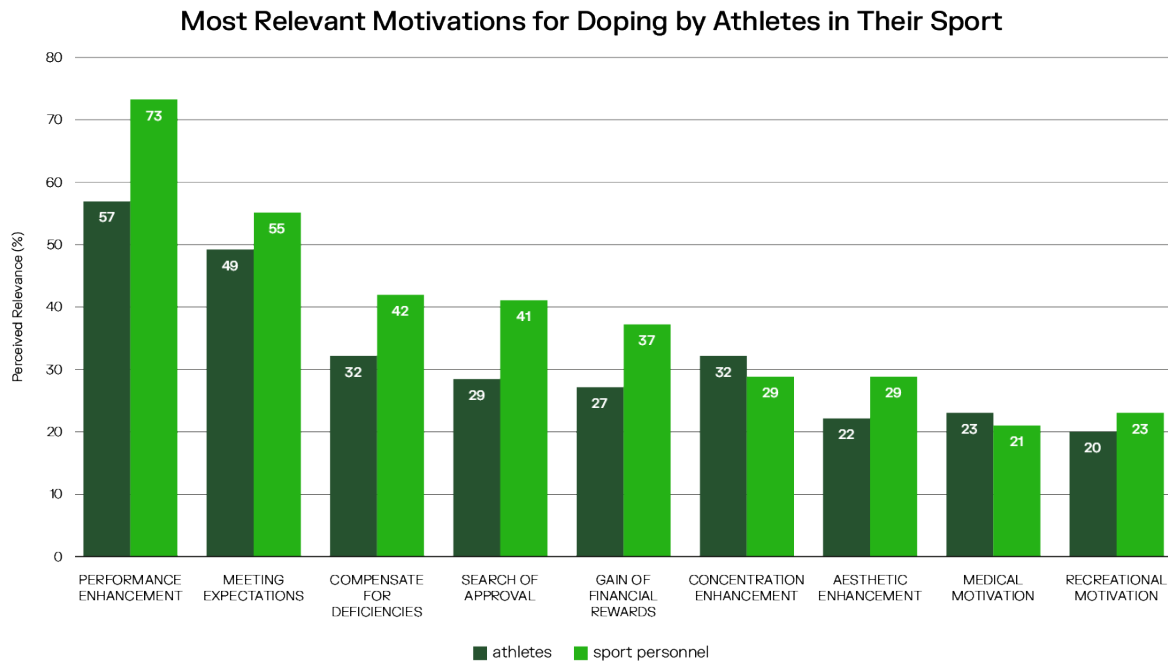


Figure 4: Perceived Most Relevant Doping Motivations

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Performance enhancement was nominated the most relevant motivation for doping by both athletes and stakeholders. ADOs should consider this as part of their education programs but, importantly, there are other reasons why athletes might dope, these must also be considered and addressed when planning and delivering education as well as wider anti-doping strategies.

Given the prominence of performance enhancement, it is important to understand why athletes want to improve their performance, beyond winning, and what drives them to dope to do that.

4.5 Estimated Prevalence of Doping

Respondents were asked to estimate what percentage of athletes could be doping in their sport. Overall, the total sample estimated 21% of athletes to be doping. Athletes had a higher estimation at 25% compared to all stakeholders at 21%. Stakeholder types varied with their estimates, with coaches/technical personnel estimating 22%, medical personnel 17% and administrators/federation leaders the lowest at 15%.

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Perceptions of the prevalence of doping may have an impact on athletes' own vulnerability to doping. The difference between administrators' perceptions (15%) and athletes' perceptions (25%) highlights the need to understand this issue better so that probable misperceptions on the reality of the behavior of doping do not pervade; for example, the belief that 'everyone is doing it'.

WADA is currently working on developing tools and guidance for ADOs to be able to determine the prevalence more reliably in their sports and countries.

4.6 Beliefs About Athletes' Doping Knowledge

Respondents were presented with the eight knowledge areas listed in Figure 5 and asked to rate the perceived knowledge of athletes in their sport on each of these areas on a six-category scale from 'do not know' to 'advanced knowledge'. Figure 5 shows the percentage of sport personnel and athletes rating athletes' knowledge as 'good' or 'advanced' in each area.

Figure 5 shows that sport personnel and athletes' perceptions are in general agreement on all knowledge areas, with around two-thirds of each rating the knowledge of 'spirit of sport' 'good or advanced': 63% of sport personnel and 66% of athletes. Of significance for education programs, only around half of both sport personnel and athletes rated 'risk of doping' as 'good or advanced', and slightly less than half of both sport personnel and athletes rated 'effect of doping on health' as 'good or advanced'.

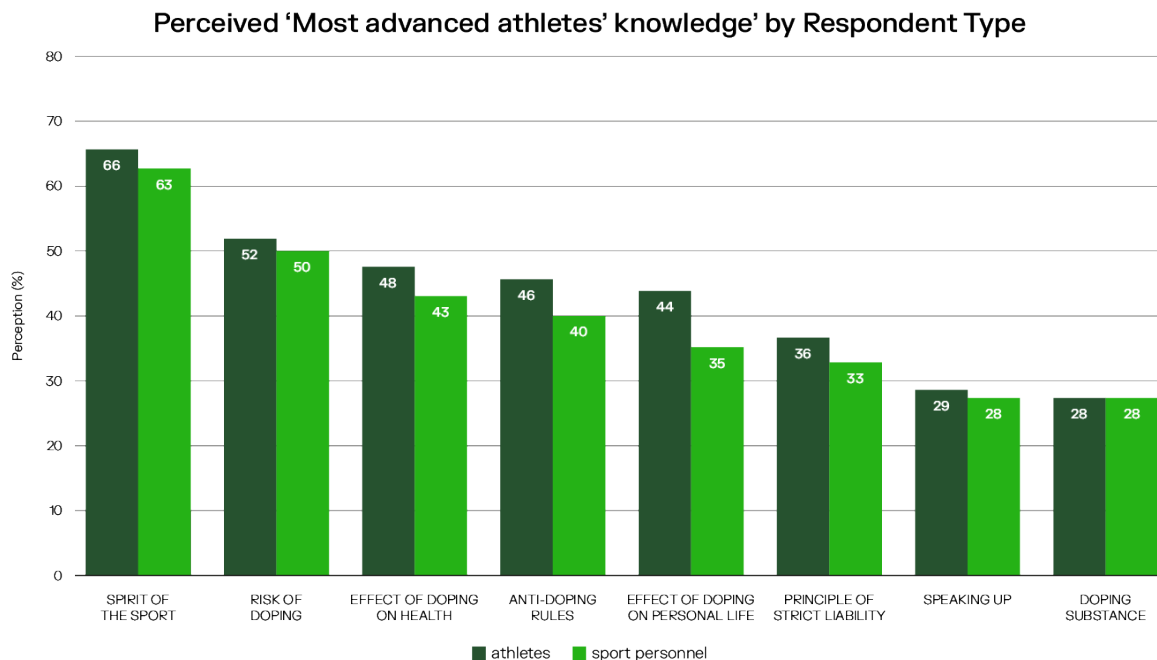


Figure 5: Perceived 'Most advanced knowledge' by Respondent Type

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There is a perception that athletes have more knowledge about general concepts and principles of anti-doping like the Spirit of Sport and the risks related to doping, including health consequences, relative to knowledge about rules, substances and specific behaviors like whistleblowing. This is a consideration for ADOs when developing education programs to ensure increased knowledge on all topics and to increase their athletes' ability to transfer this knowledge into their everyday clean sport behaviors.

ADOs should refer to the International Standard for Education (ISE), specifically examining all components of education and also consult with the [Guidelines for Education](#) in implementing a comprehensive education program.

4.7 Sources of Information About Anti-Doping

Respondents were presented with a list of 13 common sources of information for anti-doping information and asked to choose which three they thought were the most consulted by athletes. WADA, through its website and the ADEL platform was cited as the most consulted source of information.

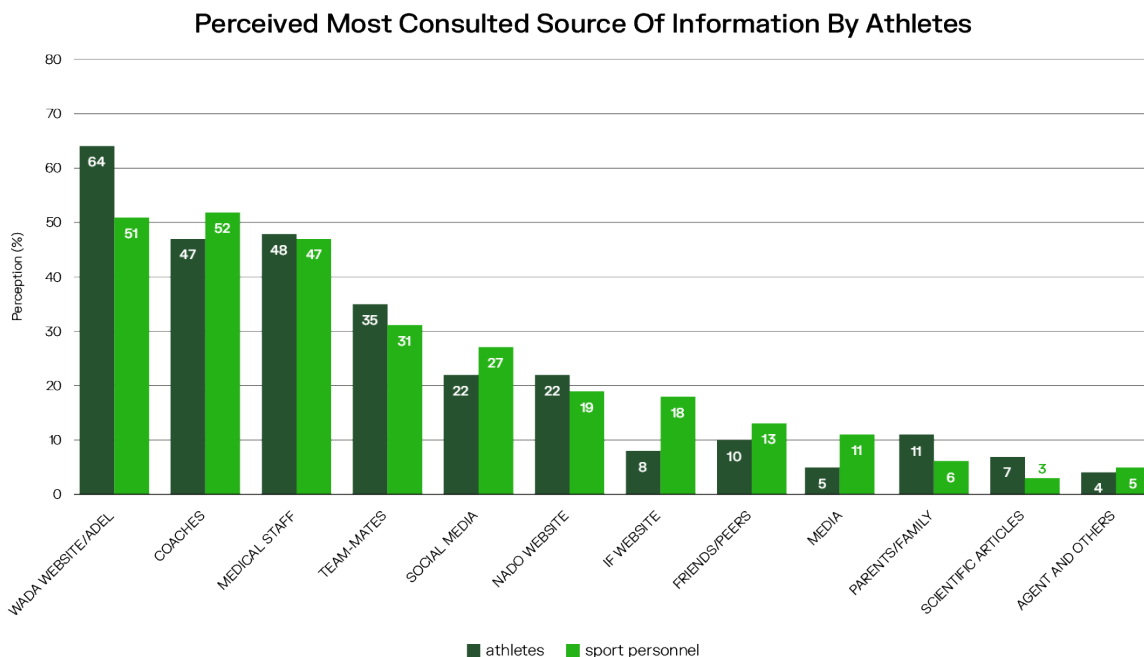


Figure 6: Perceived Most Consulted Source of Information by Athletes

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WADA was cited as the most common source of information by athletes and second most common by stakeholders. WADA, as a regulator, provides solutions for stakeholders to help inform and educate their athletes but, as a regulator, does not have an ongoing direct relationship with athletes.

Stakeholders rated both the NADO website and IF website as a relatively low source of information. Stakeholders may consider how they present themselves more prominently as an authoritative source of information for athletes or support their stakeholders, like National Federations, to be a reliable source of information considering they are most likely to have the most contact points with athletes. Stakeholders may also consider how they can use WADA resources to help promote themselves with their own athletes. There are a number of co-branding opportunities available to achieve this.

4.8 Perceived Most Influential Athlete Support Personnel Along the Athlete Pathway

Respondents were presented with thirteen categories of athlete support personnel and asked to nominate the three they believed were most influential at each of the seven listed stages along the athlete pathway. The thirteen categories, based on definition of ASP in the World Anti-Doping Code, were: Manager, Coach, Trainer, Team Staff, Agent, Media Personnel, Medical Personnel, Parents, Partner/Spouse, Peers, Sport Administrator, Commercial Sponsors and Officials.

Table 1 presents the three personnel most nominated at each stage on the pathway. Table 1 shows that sports personnel (i.e., Coach, Manager and Trainer) are most nominated at the highest stages (International and National), with personal/social connections (i.e., Parents, Partners and Peers) frequently nominated at lower stages. Coaches are clearly the most nominated across all stages.

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Coaches being so prominent and influential at all stages of an athlete's career also have educational needs that are appropriate to the level of athlete they are coaching. ADOs should consider educational programs for coaches and tailoring information resources to ensure they meet the needs of coaches thus enabling them to provide accurate information and advice to their athletes.

Table 1: Top Three Support Personnel Perceived Most Influential at Each Stage Along Athlete Pathway

Stages on athlete pathway	Admin Leadership 162	Coach/technical 145	Medical personnel 48	Athletes 219
International level	Coach Manager Trainer	Coach Manager Trainer	Coach Trainer Manager	Coach Trainer Team staff
National level	Coach Trainer Manager	Coach Manager Trainer	Coach Trainer Manager	Coach Trainer Manager
Talented	Coach Peers Parents	Coach Trainer Manager	Coach Trainer Manager	Coach Parents Manager
Youth	Coach Parents Peers	Coach Parents Trainer	Coach Parents Peers	Coach Parents Peers
Children/School sport	Coach Parents Peers	Coach Parents Peers	Parents Coach Peers	Parents Coach Peers
Recreational	Peers Trainer Partner	Coach Peers Trainer	Peers Coach Trainer	Coach Peers Parents
Masters	Coach Peers Partner	Coach Peers Trainer	Peers Partner Coach	Coach Trainer Peers

4.9 Beliefs About Ways to Support Vulnerable Athletes to Prevent Doping

Respondents were presented with the twelve ways to support athletes vulnerable to doping listed in Figure 7 and asked to select up to three ‘best’ ways to support vulnerable athletes to prevent doping.

Figure 7 shows that while there are some variations between sport personnel and athletes with respect to these supports, there is overall agreement across all respondent types (and especially sport personnel) that ‘education of the athlete’ is the single best way to prevent vulnerable athletes from doping: nominated by 84% of sport personnel and 64% of athletes.

‘Education of ASP’ was selected by 34% of sport personnel and 36% of athletes, and ‘education of parents’ was selected by 29% of sport personnel but less so by athletes: 22%.

Both psychological and nutritional support were also selected by substantial percentages – and particularly by athletes 37% and 39% respectively (versus 34% and 30% of sport personnel).

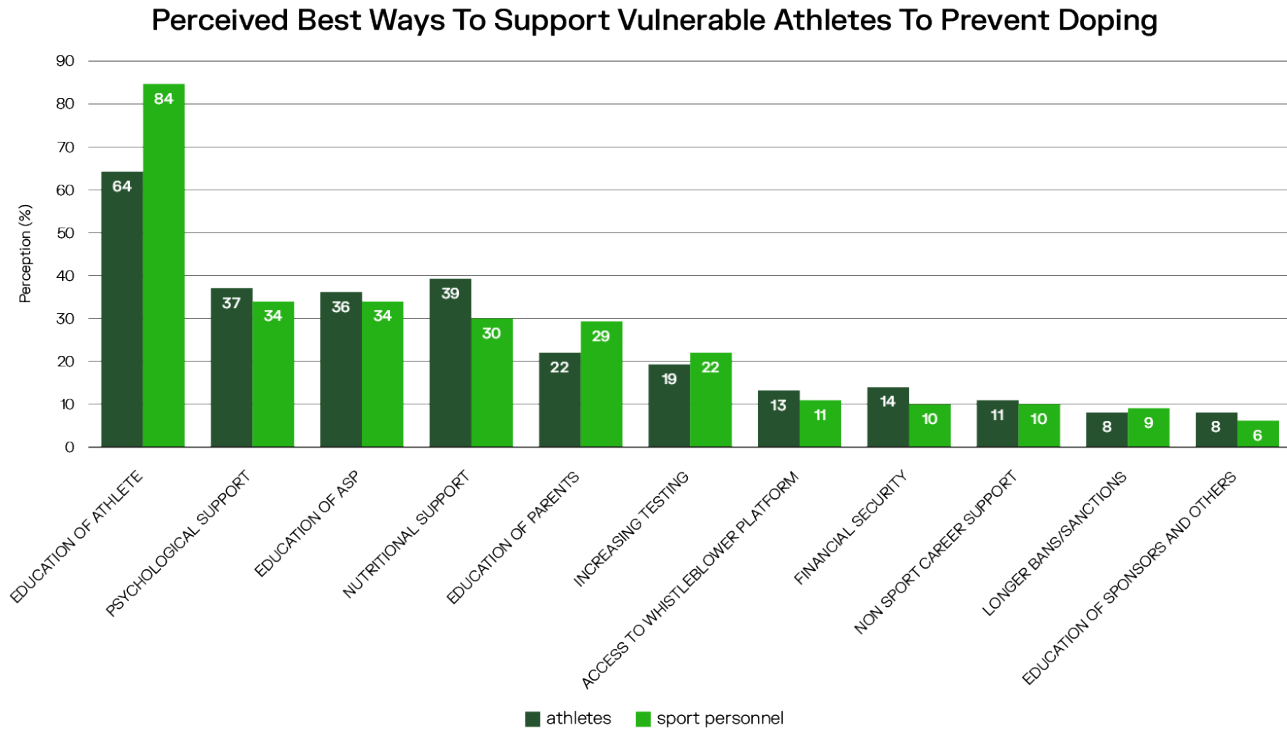


Figure 7: Perceived Best Ways to Support Vulnerable Athletes to Prevent Doping

5. Summary of Major Findings of Preliminary Descriptive Analyses

Overall, these preliminary analyses reveal considerable information about the beliefs of sport personnel across a variety of countries and sports about their athletes with respect to doping vulnerability and related factors. These analyses also reveal insights from athletes of some of these federations on their beliefs about these factors, and hence where athletes and sport personnel have common beliefs and where there are notable differences. This – and subsequent analyses - will further inform how WADA and ADOs can improve interventions, such as education programs for all athlete and ASP groups in general. Some of the major findings are listed below. Elaboration of these and more detailed implications for Education and wider anti-doping programs will be examined further as part of ongoing research in this area, including the refinement of the questionnaire in order to be made available to sport personnel to conduct their own follow-up research for comparison.

- Of the 35 risk factors for doping revealed in the literature review, this survey identified the nine factors nominated by both sport personnel and athletes as ‘most important’. These indicate that anti-doping education efforts need to cover a broad range of topics. A major point of difference between sport personnel and athletes was that ‘nutritional supplements’ was considered the most important by sport personnel with almost 50% nominating this factor, whereas it was the 6th most frequently nominated factor by athletes and was nominated by just under 20%.
- Not unexpectedly, both sport personnel and athletes believed that the risk of doping was highest for both male and female athletes at the International level, with the National level next highest. Respondents considered the risk for males higher than that for females at all stages.
- Of the nine motivations for doping presented to respondents, significant percentages of both sport personnel and athletes rated each of these as ‘relevant’ for athletes in their sport. This reinforces that Education programs need to include a broad curriculum and ensure that all relevant risk factors and motivations are covered.
- With respect to beliefs about athletes’ knowledge of doping, substantial percentages (50% – 66%) of both sport personnel and athletes considered athletes have ‘good or advanced’ knowledge of some of the eight topics they were asked about (e.g., ‘Spirit of Sport’ and ‘risk of doping’), but topics such as ‘doping substances’ and ‘speaking up’ had far lower endorsements (28-29%).
- Consistent with findings in the literature and in the public domain, athlete support personnel considered to have the most influence on athletes at all stages of the pathway were Coaches, Managers and Trainers, with Coaches ranked first by most respondents for most stages. Nevertheless, social groups (parents, peers, partners) were considered influential at earlier stages, and hence all should be included in education programs.
- Of the eleven presented ways to support athletes vulnerable to doping, ‘Education’ was nominated significantly more than all other ways by both sport personnel (84%) and athletes (64%). Several other ways were nominated by substantial percentages (e.g., psychological support, education of ASP, and nutritional support – 30-39%), indicating that vulnerable athlete support should cover a variety of areas.

- Overall, and subject to ongoing analyses of the data, these data confirm that education programs covering a broad range of areas (including both knowledge and skills) are seen to be not only desirable but necessary by both sport personnel and athletes.

6. What is Next? – Phase 2 of the Athlete Vulnerabilities Project

This descriptive report outlines the results of the first phase of the research project which aimed to understand the subject matter better and to survey IF and NF personnel on their perceptions of athlete vulnerabilities in their sport.

Now that the preliminary analyses are complete, a more detailed examination of the sample and implications will be conducted to close out Phase 1 of the project.

Overall, the project will work towards the objective set out in WADA's Strategic Plan of 'identifying vulnerable athlete groups to connect, support and recommend appropriate interventions'. WADA's SSR Strategy is also aligned with this objective and will continue to support initiatives and projects in the area through to 2024 at least.

Phase 2 of the project will involve looking specifically at a sport-by-sport profile of athlete vulnerabilities (for high risk/Tier one sports and where sufficient data exists or can be gathered) in order to have a more nuanced view of this topic and useful educational intelligence for sport federations to be in a more informed position to support vulnerable athletes. WADA will continue to work with l'Université de Sherbrooke on Phase 2 of this research, investing in a PhD-level study.

As athlete vulnerabilities are also aligned with the research priorities of the WADA SSR Grant Program, projects will continue to be accepted and considered for funding to examine this topic further. Researchers and ADOs can find out more about the Grant Program at www.wada-ama.org/en/social-science-research including seeing live projects that are currently investigating this topic.

WADA will also continue to raise awareness of the topic of Athlete Vulnerabilities through different mediums and channels such as conferences, webinars and the development of resources.

Ultimately, focusing on athlete vulnerabilities is about recognizing that **athletes start in sport clean**, with the vast majority intending to compete clean throughout their careers. There may, however, be circumstances and environmental factors that can increase an athlete's vulnerability to dope at different stages in their career. Recognizing these 'pressure points', spotting 'red flags' when athletes are struggling or not coping, and providing the necessary support is in line with WADA and the World Anti-Doping Code's fundamental purpose to protect athletes and work towards the prevention of doping.

