RESEARCH PACKAGE FOR ANTI-DOPING ORGANIZATIONS

WORLD ANTI-DOPING AGENCY

SOCIAL SCIENCE

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A research package, including a standard questionnaire, to assist anti-doping organizations (ADOs) measure athletes' beliefs and behaviors with respect to doping, and to assess the effectiveness of anti-doping programs.

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WORLD ANTI-DOPING AGENCY

TABLE OF CONTENTS

INDEX OF TABLES

INDEX OF FIGURES

PROJECT RATIONALE AND OVERVIEW

This project aimed to develop a resource for anti-doping agencies (and other interested parties) to facilitate these agencies' research and evaluation efforts, as well as provide input to areas requiring intervention. Agencies using this resource will be able to compare their athlete populations over time, before and after interventions, and directly with other agencies' athlete populations on the same measures.

Using the Sport Drug Control Model of factors influencing athletes' doping decisions, the aim was to translate our knowledge of doping influences into developing standardized guidelines for anti-doping agencies to conduct research on their populations of athletes, assess the impact of their anti-doping efforts, and identify areas of risk that require attention. This project can be described as a knowledge translation exercise, where the overall objective was to apply what we know about the influences on athletes' attitudes and behaviors with respect to doping, to policy and practice in the real world.

This project addressed a number of issues in anti-doping social science research. First, to date there are no universally accepted and used measures of athletes' beliefs, attitudes and behaviors with respect to doping. Similarly, there are various scales for specific constructs, such as moral stance and moral disengagement, but in many cases there are considerable differences between construct measures. The use of different scales and question items makes comparison between studies difficult and unreliable.

Second, much of the doping research to date has been undertaken by academic research institutions, where the objectives are often to explore theoretical models and relationships between constructs, rather than to develop and evaluate 'real world' anti-doping and related interventions. While these data provide substantial implications for anti-doping interventions, the results are often not in a form readily understood by practitioners, and hence there is less than optimal translation into practice.

Third, while some anti-doping agencies have the capacity and expertise to commission expert researchers to develop questionnaires and conduct surveys of their athletes or assess the impact of their anti-doping efforts, many do not.

Hence this project aimed to develop a resource for anti-doping agencies (and other interested parties) to facilitate these agencies' research and evaluation efforts, as well as provide input to areas requiring intervention. Agencies using this resource will be able to compare their athlete populations over time, before and after interventions, and directly with other agencies' athlete populations on the same measures.

It is hoped that a readily available and user-friendly tool with practical implications for interventions will substantially enhance the fight against doping by facilitating research and intervention activities by anti-doping agencies that previously lacked expertise to undertake relevant research and translate their findings into actions.

SPECIFIC OBJECTIVES

There were three specific objectives:

1. To provide anti-doping agencies with a standard questionnaire (section 1) and a suite of questionnaire modules (section 5) for measuring athletes' responses in each of the Sport Drug Control Model's domains that influence doping attitudes and behaviors.
2. To provide anti-doping agencies with guidelines on methodological issues for collecting data from athletes (i.e., various sampling methods and interviewing modes) (section 2).
3. To provide anti-doping agencies with guidelines for analyses and interpretations of survey data, along with recommended actions where the data indicate areas requiring attention (section 3).

Overall, it is intended that this 'Research Package' will not only assist anti-doping agencies in their work, but will allow direct comparison between athlete populations around the globe by using this standardized survey instrument.

SUMMARY OF SECTIONS OF THE RESEARCH PACKAGE

Section 1: The standard questionnaire and sample letters

This section contains a questionnaire in self-completion form suitable for a mail survey of elite (or other level) athletes. An introductory letter to athletes and reminder letter are also included in this section. This questionnaire contains all the basic items for gaining an understanding of athletes' beliefs about matters relevant to their susceptibility to doping as per the Sport Drug Control Model.

Section 2: A guide to conducting surveys of athletes, selecting samples and interview mode

This section provides a number of guidelines for selecting samples of athletes to take part in a survey. It covers issues around how to contact and select athletes, sample size, and interview mode (i.e., face-to-face, telephone, mail, online).

Section 3: Data analyses and interpretation for action

This section suggests basic data analyses for all the questionnaire measures and implications of various results.

Section 4: Description of all constructs measured in the standard questionnaire, along with extra items relevant to doping research, including examples of results obtained in an Australian sample of elite athletes

This section provides a comprehensive overview of the Sport Drug Control Model and the rationale for selecting the measures in the standard questionnaire, a description of the construct being measured by the questionnaire items, and examples of results obtained in a sample of elite Australian athletes.

Section 5: A complete listing of all questionnaire measures

This section provides a listing of 14 questionnaire modules relevant to anti-doping research. The listing includes all basic measures in the standard questionnaire as well as optional extras that can be used for more specific purposes.

SECTION 1: THE STANDARD QUESTIONNAIRE AND SAMPLE LETTERS

This section contains the standard questionnaire in self-completion form suitable for a mail survey of elite (or other level) athletes. This questionnaire contains all the basic items relevant to gaining an understanding of athletes' beliefs about matters relevant to their susceptibility to doping.

An example of an introductory invitation-to-participate letter to athletes and an example reminder letter are also included in this section. [Note that this letter is for a one-off survey. If the aim were to contact these same athletes at a particular time in the future, that information would need to be included and the wording altered appropriately.]

As exemplified in the introductory letter, to ensure a satisfactory response rate and honest answers, it is strongly recommended that the NADO or other agency collaborate with an independent agency (such as a University) to receive and analyze the athletes' completed questionnaires.

1.1 Introductory Letter

(Insert the University's name and logo)

Dear Athlete,

We have been commissioned by **(insert name of NADO)** to conduct a survey on elite athlete's attitudes and opinions on sport issues. We are behavioral researchers in **(insert name of University)**.

The survey is being sent to a large sample of elite athletes, like yourself, nationally. It is important that we hear the views of as many elite athletes as possible. Participation in this survey is voluntary. No question is compulsory. There are no right or wrong answers. We just want your honest opinion. The information you provide is confidential. We are interested in your personal opinions and not what other people may or may not think. No individual responses can be identified and only total data are analyzed. We do not want you to write your name on this survey or on the return envelope. All completed surveys are returned to **(insert name of University)** for processing. The survey will take you about 25 minutes to complete.

Your participation in completing this survey is very much appreciated. After completing the survey, please return it to **(insert name of University)** in the enclosed reply paid envelope as soon as possible, preferably within a week. If you would like more information about this project please contact **(insert name of contact and contact details)**.

Sincerely

1.2 Standard Questionnaire

(Insert the University's name and logo)

Survey of Elite Athletes' Opinions on Sport Issues

Thank you for completing this survey. This survey asks for your attitudes and opinions on sport issues. Participation in this survey is voluntary. No question is compulsory. There are no right or wrong answers. We just want your opinion. All your responses are strictly confidential. Do not write your name on this survey. All completed surveys will be returned to (**insert name of university**) for processing.

Your participation in completing this survey is very much appreciated.

Instructions:

For most questions, there is a choice of answers. Simply pick the one that's true for you and circle the number corresponding to it. There are some questions where you need to write in an answer. For these questions, a space will be provided for you.

It is important that you answer every question as best as you can. There are no right or wrong answers, we just ask you to be completely honest.

Please start with Q1. 

Q1. What is the main sport you are or have been involved in?

_____

Q2. How many years have you competed in your main sport?

Less than 1 year (or season) 1
1 or 2 years (or seasons 2
More than 2 but less than 5 years (or seasons 3
5 or more years (or seasons 4

Q3. What is the highest level you have competed at?

Olympic games 1
World championship events/international events 2
National competition 3
State competition 4
Regional competition 5
City/district competition 6

Q4. Do you hold or have you ever held titles?

Yes – National title 1
Yes – International title 2
Yes – State title 3
No 4

Q5. Have you ever had a Therapeutic Use Exemption?

Yes – and still have 1
Yes – but no longer 2
No 3

Q6. Do you compete in events for athletes with a disability?

Yes 1
No 2

Q7. How much would you personally like these outcomes for performing well in your sport?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

Q8. To what extent does your sport offer athletes these outcomes if they perform well?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

Q9. If you were to use the following substances, how likely is it that these substances would improve your performance in your sport?

	Definitely would not	Probably would not	Might or might not	Probably would	Definitely would	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances.	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9

Q10. If you were to use a banned performance enhancing substance of your choice, how likely is it that you would improve your performance in your sport?

Definitely would not 1
Probably would not 2
Might or might not 3
Probably would 4
Definitely would 5
Don't know 9

Q11. How much pressure, directly or indirectly, do you think the (**country**) government or the (**country**) Olympic Committee puts on elite athletes to win Olympic gold medals?

No pressure at all 1
A little pressure 2
Moderate pressure 3
A lot of pressure 4

Q12. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased a 'win at all costs' attitude amongst elite athletes?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

Q13. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased the temptation amongst elite athletes to use banned performance enhancing substances?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

Q14. Have you ever been drug tested?

Yes 1
No ..... 2 → **Go to Question Q18.**

Q15. Have you been drug tested in the past year?

Yes 1
No 2

Q16. Did you find the experience of being tested traumatic or upsetting in any way?

No 1
Yes – somewhat 2
Yes – very much 3

Q17. How would you describe the conduct of the testing personnel?

(a)	Courteous	OR	Rude	Or	Neither
	1		2		3
(b)	Helpful	OR	Unhelpful	Or	Neither
	1		2		3
(c)	Friendly	OR	Unfriendly	Or	Neither
	1		2		3
(d)	Sensitive	OR	Insensitive	Or	Neither
	1		2		3

Q18. Failing is a natural part of athletic pursuits. The following statements capture the different ways in which athletes might respond to or interpret failure. Please rate the extent to which you believe each of the following statements based on how you would currently describe yourself.

	Do not believe at all				Believe 100% of the time
1. When I am failing, I am afraid that I might not have enough talent	1	2	3	4	5
2. When I am failing, it upsets my "plan" for the future	1	2	3	4	5
3. When I am not succeeding, people are less interested in me	1	2	3	4	5
4. When I am failing, important others are disappointed	1	2	3	4	5
5. When I am failing, I worry about what others think about me	1	2	3	4	5

Q19. To what extent do you think that athletes who have been given Therapeutic Use Exemptions have been thoroughly evaluated and that their exemptions are justified?

None justified 1
Most not justified 2
Some are justified, others are not.....3
Most justified.....4
All justified.....5
Don't know 9

Q20. How much harm to your health do you think would be caused by using each of the following substances <u>for a short time</u> say up to two months?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2. Beta-blockers	1	2	3	4	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4. Erythropoietin (EPO) and other similar substances.	1	2	3	4	9
5. Human growth hormones (hGH).	1	2	3	4	9
6. Diuretics.	1	2	3	4	9

Q21. How much harm to your health do you think would be caused by using each of the following substances <u>regularly</u>?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2 Beta-blockers	1	2	3	4	9
3 Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4 Erythropoietin (EPO) and other similar substances	1	2	3	4	9
5 Human growth hormones (hGH)	1	2	3	4	9
6 Diuretics	1	2	3	4	9

Q22. How expensive would it be for you personally to buy each of the following types of substances?

	Very cheap	Quite cheap	Neither	Quite expensive	Very expensive	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Q23. How easy or difficult would it be for you to get each of the following types of substances if you wanted to?

	Probably impossible	Very hard	Fairly hard	Fairly easy	Very easy	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Q24. If you wanted to get and use a banned performance-enhancing substance, which of the following people, if any, do you think would help you if you asked them to do so?

	Would definitely help me	Would probably help me	Might or might not help me	Probably would not help me	Definitely would not help me	Don't know
1. Your coach	1	2	3	4	5	9
2. Parents	1	2	3	4	5	9
3. Team mates/training partners	1	2	3	4	5	9
4. Team doctor	1	2	3	4	5	9
5. Sports psychologist	1	2	3	4	5	9
6. Trainer	1	2	3	4	5	9

Q25. If you wanted to use a banned performance-enhancing substance, how easy would it be to get good medical advice on how to use the substance?

Probably impossible 1
Very hard 2
Fairly hard 3
Fairly easy 4
Very easy 5
Don't know 9

Q26. Do you intend to use prohibited substances or methods to enhance my performance or gain a competitive edge against your opponents during this season?

Definitely not 1
Probably not 2
Might or might not 3
Probably will 4
Definitely will 5

Q27. How often have you used any of these nutritional supplements in the past 12 months?

	Never	Rarely	Sometimes	Frequently	Very frequently	Systematically
1. Vitamin or mineral supplements	1	2	3	4	5	6
2. Herbal products	1	2	3	4	5	6
3. Creatine	1	2	3	4	5	6
4. Sports drinks	1	2	3	4	5	6
5. Energy bars	1	2	3	4	5	6
6. Caffeine	1	2	3	4	5	6
7. Protein-carbohydrate shakes	1	2	3	4	5	6

Q28. In the last 12 months, how often have you used any of the following, for whatever reason?

	Have never used	Did not use in the last 12 months	1 to 2 times	3 to 5 times	6 to 10 times	More than 10 times
1. Anabolic steroids	1	2	3	4	5	6
2. Beta-blockers	1	2	3	4	5	6
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	6
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	6
5. Human growth hormones (hGH)	1	2	3	4	5	6
6. Diuretics	1	2	3	4	5	6
7. Doping methods	1	2	3	4	5	6
8. Alphabodies	1	2	3	4	5	6

Q29. How serious do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (**country**)?

	Not at all serious	Not serious	A little serious	Quite serious	Very serious
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

Q30. Overall, how effective do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (**country**)?

	Not at all effective	Not effective	A little effective	Quite effective	Very effective
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

Q31. Which one of the following most applies to you?

I have never considered using a banned performance-enhancing substance 1
At one stage I thought briefly about using a banned performance-enhancing substance 2
At one stage I thought quite a bit about using a banned performance-enhancing substance 3
I still think occasionally about using a banned performance-enhancing substance because other athletes are using them 4
I briefly used a banned performance-enhancing substance in the past but no longer do so 5
I occasionally use a banned performance-enhancing substance now for specific purposes 6
I regularly try or use banned performance-enhancing substances 7

Q32. If you were offered a banned performance enhancing substance under medical supervision at low or no financial cost and the banned performance enhancing substance could make a significant difference to your performance and was currently not detectable, how much consideration do you think you might give to this offer?

None at all 1
A little consideration 2
Some consideration 3
A lot of consideration 4

Q33. Given the pressures athletes are often under to win, how confident are you that you could refuse this offer?

Very confident could refuse 1
Quite confident could refuse 2
Not very confident could refuse 3
Not confident at all could refuse 4
Wouldn't want to refuse 5

Q34. How confident are you in being able to resist pressure from your team mates to use a banned substance?

Very confident could resist 1
Quite confident could resist 2
Not very confident could resist 3
Not confident at all could resist 4
Wouldn't want to resist 5

Q35. Regardless of whether you believe performance enhancing substances or methods (PESM) should be banned or allowed, which of the following statements best describes your own personal feelings about deliberately using banned PESM?

I believe deliberately using banned PESM to improve performance is morally wrong under any circumstances 1
I believe deliberately using banned PESM to improve performance is morally OK under some circumstances, but wrong under others 2
I believe deliberately using banned PESM to improve performance is morally OK under any circumstances 3

Q36. If you were caught using banned performance enhancing substances or methods, to what extent would you experience the following feelings:

	Not at all				A great extent
1. Ashamed	1	2	3	4	5
2. Embarrassed	1	2	3	4	5
3. Guilty	1	2	3	4	5

Q37. If you decided to use a banned performance enhancing substance, to what extent do you think each of the following people would approve or disapprove, or would not care either way if you did that?

	Would definitely approve	Would probably approve	Wouldn't care either way	Probably disapprove	Definitely disapprove
1. Your coach	1	2	3	4	5
2. Parents	1	2	3	4	5
3. Team mates/training partners	1	2	3	4	5
4. Team doctor	1	2	3	4	5
5. Close friends	1	2	3	4	5
6. Trainer	1	2	3	4	5

Q38. The following statements are intended to provide an insight into your beliefs regarding other athletes' use of doping.

Percentage (%)

1. Out of 100%, how many athletes in your sport do you believe engage in doping to enhance their performance? _____
2. Out of 100%, how many elite athletes in your country do you believe engage in doping to enhance their performance? _____
3. Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 2 years to enhance their performance? _____
4. Out of 100%, how many coaches in your sport do you believe would encourage their athletes to use doping to enhance their performance? _____
5. Out of 100%, how many coaches in elite sports in your country do you believe would encourage their athletes to use doping to enhance their performance? _____

Q39. How likely is it that athletes at your level would be drug tested at least once a year?

(a) In competition at least once a year:

Very likely. 1
Quite likely. 2
A little likely. 3
Not likely 4
Not at all likely. 5
Don't know 9

(b) Out of competition at least once a year:

Very likely 1
Quite likely 2
A little likely 3
Not likely 4
Not at all likely. 5
Don't know 9

Q40. It has been said that athletes who take banned substances can use various methods to avoid testing positive.

(a) From what you know or have heard, if you were to take banned performance-enhancing substances <u>while competing</u>, how likely do you think that you could get away with it if you really tried to?

Very likely 1
Quite likely 2
A little likely 3
Not likely 4
Not at all likely. 5
Don't know. 9

(b) From what you know or have heard, if you were to take banned performance-enhancing substances <u>out of competition</u>, how likely do you think that you could get away with it if you really tried to?

Very likely. 1
Quite likely. 2
A little likely. 3
Not likely 4
Not at all likely. 5
Don't know. 9

Q41. From what you know or have heard, are the penalties for a positive drug test in your sport severe or lenient?

Very severe. 1
Fairly severe 2
Fairly lenient 3
Very lenient. 4
Don't know. 9

Q42. How fair is the (**insert name of NADO**) in terms of treating all athletes equally?

Very fair 1
Fair 2
Unfair 3
Very unfair 4
Don't know. 9

Q43. How secure is the (**insert name of NADO**)'s drug testing procedures in (**country**)? That is, in the taking of samples and the care of samples?

Very secure 1
Quite secure. 2
Not really secure.....3
Not at all secure.....4
Don't know 9

Q44. How accurate do you feel the current drug tests are in terms of being able to correctly identify the following substances?

	Very accurate	Quite accurate	A little accurate	Not accurate	Not at all accurate	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Q45. How satisfied are you that athletes who appeal a positive test in (**insert name of country**) will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied.....3
Very dissatisfied.....4
Don't know 9

Q46. How satisfied are you that athletes in your sport who test positive will be given a fair hearing before a decision is made about applying a penalty?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied.....3
Very dissatisfied.....4
Don't know 9

Q47. How satisfied are you that athletes who appeal a positive test before the Court of Arbitration in Sport will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied 3
Very dissatisfied 4
Don't know 9

Q48. What is your age?

..... _____

Q49. Are you:

Male 1
Female 2

Q50. What is your highest level of education? (**adapted to country**)

Completed Year 9 or less 1
Completed Year 10 2
Completed Year 11 3
Completed Year 12 4
Some technical college 5
Some University 6
Currently enrolled in technical college 7
Currently enrolled in University 8
Completed technical college 9
Completed University 10

Q51. To what extent do you currently derive income from your participation in sport? Include here both direct payments and winnings as well as sponsorships, endorsements and scholarships.

No income at all from sport 1
Occasional income from sport 2
Regular income but less than half of total income 3
About half my income from sport 4
More than half from sport, but not all my income 5
All or almost all of my income from sport 6

Q52. What is your total annual income from all sources? (**adapted to country**)

Less than 10,000 1
10,000 to 19,999 2
20,000 to 29,999 3
30,000 to 49,999 4
50,000 to 69,999 5
70,000 to 99,999 6
100,000 or more 7

Thank you for completing this survey. Please return it in the reply paid envelope provided.

1.3 Reminder Letter

(Insert the University's name and logo)

Dear Athlete,

About two weeks ago we sent you a questionnaire seeking your attitudes and opinions on sport issues. It is important that we hear the views of as many elite athletes as possible. If you have already completed and returned the questionnaire, thank you very much, and we apologize for this reminder.

If you have not yet completed the questionnaire, please do so and return it in the reply paid envelope, preferably within a week. The information you provide is confidential. You do not need to record your name on the questionnaire or any other materials.

If you would like more information about this project please contact **(insert name of contact and contact details)**.

Many thanks for your participation.

Sincerely

SECTION 2: A GUIDE TO CONDUCTING SURVEYS OF ATHLETES, SELECTING SAMPLES AND INTERVIEW MODE

This section provides a number of guidelines for selecting samples of athletes to take part in a survey. It covers issues around how to contact and select athletes, sample size, and interview mode (i.e., face-to-face, telephone, mail, online).

We first deal with the issue of a NADO surveying its own athletes and the likely response to that by athletes. Where questionnaires contain items related to doping attitudes and behaviors, it is self-evident that if athletes believed that their responses would be seen by their NADO, then many would either not answer honestly or not answer at all. Hence it is most important that where questionnaires contain these sorts of items, it is made very clear to athletes that although the NADO has provided their address and has commissioned the research, the questionnaires will be sent to an independent third party for analyses, and that this third party will keep no identifying information about the athlete. This is one factor in favor of mail questionnaires: no name is required on the questionnaire, the questionnaires are not numbered for later matching to whom they were sent, and athletes can be provided with a stamped envelope for returning the questionnaire to an independent third party. Hence, where a NADO wishes to undertake a survey of athletes on their database and the survey includes sensitive questions, then it is strongly recommended that a third party be engaged to receive the questionnaires and analyze the data. For surveys requiring non-sensitive information, the NADO could conduct the survey themselves. However, even in these cases, a third party is likely to obtain a higher response rate and more honest responses.

On the other hand, where the survey does not contain sensitive information, the NADO can ask athletes to return their questionnaires to the NADO. However, even in these cases, it could be preferable to have questionnaires returned to a more 'neutral' body such as their sporting federation or a well-known and highly regarded institute of sport in the particular country.

2.1 Data Collection Methodologies

There are four main interviewing modes that can be applied to collect data from athletes:

1. Face-to-face: An interviewer either administers the questionnaire (i.e., the interviewer reads out the questions to athletes and records their responses) or the interviewer hands the questionnaire to athletes to self-complete (i.e., fill it out by themselves).
2. Telephone: An interviewer administers the questionnaire to athletes via telephone.
3. Online/computer: Athletes are emailed the questionnaire or provided with a link to access the questionnaire to self-complete.
4. Mail: The questionnaire is sent to athletes via mail to self-complete.

Table 2.1 lists the characteristics of the interviewing modes in terms of issues on sampling and interviewing. The main advantage of face-to-face is the moderate to high response rate, especially if the interviewers are professionally trained in recruiting athletes. In general, interviewer-administered is preferable to self-completion as the interviewers are able to probe responses and elicit answers to open-ended questions. On the other hand, where some questions are very sensitive (i.e., asking about use of illegal substances), self-completion is the much preferred mode. The main disadvantages of face-to-face interviewing are the high costs and relatively long time required to gather data.

Table 2.1: Comparison of interviewing modes in relation to sampling and interviewing

	Face-to-face (interviewer administered)	**Face-to-face (self-completion)**	**Mail**	**Telephone**	**Online**
Sampling issues:					
Overall relative survey costs	High	High	Moderate	Mod-high	Low
Sample size (given same budget)	Small	Moderate	Moderate	Moderate	Large
Response rate	Mod-high	Mod-high	Mod-low	Moderate	Mod-low
Time taken to gather data	Long	Long	Long	Moderate	Short
Interviewing issues:					
Use of visual prompts	Yes	Yes	Yes	No	Yes
Use of audio prompts	Yes	Yes	No	Yes	Yes
Pick up nonverbal cues	Yes	No	No	No	No
Physical measurements	Yes	Yes	Self-reported	Self-reported	Self-reported
Probe responses	Yes	No	No	Yes	No

The main advantages of a mail survey are high reach as athletes' residential addresses are held by sporting bodies, and high perceived confidentiality. The main disadvantages of a mail survey are a lower response rate and the relatively long time required to gather data.

The main advantages of an online survey are low costs and short time required to gather data. The main disadvantages of an online survey are that sporting bodies don't always require an athlete's email address, there may be lower perceived confidentiality as a computer's IP address is recorded, a low response rate, and high number of incomplete questionnaires.

2.2 Recruitment of Athletes

There are three commonly used methods for recruiting athletes to take part in surveys:

1. Recruiting athletes at events or training: This method involves approaching athletes at events or after training and inviting them to take part in a survey. Permission to conduct the study should be sought from the event organizers and relevant sporting organizations. A stall can be set up at the venue where athletes can complete the questionnaire. However, it is preferable to arrange access to a room where athletes are able to complete the questionnaire with less distraction. The questionnaire could be interviewer or self-administered via computers (iPads, laptops, desktops) or hard copy. If interviewer-administered, it is important to ensure privacy during the interview.

2. Recruiting athletes via organizations with their athletes' mail addresses: If athletes outside the NADO's database are required, this method involves first obtaining the co-operation of organizations that have their athletes' mail addresses; that is, organizations such as sport federations, national sporting bodies, and academies and institutes of sport. To preserve the confidentiality of the athletes' contact details, these organizations may undertake the mail-out of questionnaires to athletes on their databases. On the other hand, it may be possible to negotiate a confidentiality agreement with these organizations to have access to their database for the purpose of the study. In recruiting athletes at lower levels of competition, the support of local sporting clubs will be required.

   In some cases it may be desirable or necessary to send the questionnaire package to all athletes on a particular database. In other cases, only a limited number may be required, and hence a method for selecting that number must be determined (i.e., every third name on the database).

Selected athletes are sent a questionnaire package containing the questionnaire, a covering letter (and preferably, a covering letter from their respective sporting organization encouraging athletes to participate), and a reply-paid envelope addressed to an independent third party, such as a university. Asking athletes to return the questionnaire to the NADO could negatively impact on the honesty of responses and the response rate. The covering letter should provide the following information: the purpose of the study; the importance of as many athletes as possible completing the survey; that their responses are confidential; that they cannot be identified from the questionnaire; and that only group data would be reported. A reminder letter should be sent approximately two weeks after the initial mail-out. Examples of a cover letter and reminder letter are shown in Sections 1.1 and 1.3 respectively.

3. Recruiting athletes by sending an online link via email: As with a mail survey, recruitment of athletes outside a NADO's database requires the co-operation of national sporting bodies, academies and institutes of sport, and/or local sporting clubs as these organizations have access to athletes' email addresses. To achieve a higher response rate, the athletes' respective sporting organizations should send an initial email informing athletes of an upcoming survey and encouraging them to participate. A separate email would provide an online link to the questionnaire. As above, it should be made clear to athletes by an independent third party that the link is independent of their NADO and that their individual responses will not be forwarded to the NADO.

2.3 Representative Sampling

It is usually not necessary nor practical (e.g., limited time and resources) to study an entire population. Instead, a sample of the population of interest is studied and the findings are then generalized to the population of interest. Hence, where one wishes to determine to what extent various beliefs, attitudes and behaviors are prevalent in the population of interest, it is important to select athletes within the various organizations to achieve a representative sample; that is, a sample that accurately reflects the composition of the entire population of interest on key characteristics which may include gender, age, level of competition, and ethnic group. For example, in conducting a survey of elite hockey players where half of all players are males and half are females, a representative sample would include approximately equal numbers of males and females (i.e., 100 of each in a sample of 200). In some cases the population of interest might be all elite or all junior athletes, or only members of a particular sports institute, or, as in the hockey example, only those who participate in one particular sport.

When a sample is not representative but the aim is to generalize to the entire population of interest, statistical methods are used to help deal with non-representative sample. For example, if the obtained sample of elite hockey players contained 80% males (160) and 20% females (40), the data can be 'weighted' prior to data analysis to account for the substantially greater proportions of males than females if the sample size of females is sufficient to do so. The 'weighting' adjusts the findings to what would have been obtained had the sample been 50% male and 50% female. However, it is not always possible to account for the non-representativeness of a sample. Hence, it is preferable to obtain a representative sample.

To obtain a representative sample, quotas for recruitment of athletes on one or more criteria may be set. Then athletes are randomly recruited to fill the quotas set within each sub group. This is known as a stratified random sampling technique. For example, in the above situation, once 100 males had been recruited, only females would be recruited from thereon. However, assigning quotas is generally only feasible for intercept interviewing at events and via telephone. Even then, not all sample characteristics can be simultaneously taken into consideration. Unless elaborate pre-selection occurs from information on the database, setting quotas is generally not practical for mail or online surveys. Hence, rather than setting quotas or weighting the data before analyses, the data can be analyzed by these attributes (i.e., by gender; age; sport level; etc) to determine whether these groups differ on the various questions. If they do not, then the total sample results can be taken as representative of the population of interest. However, where there are substantial sub-group differences, and these sub-groups are not proportionally represented in the sample as in the population, then the total sample results must be adjusted before stating as representative of the total population of interest.

2.4 Sample Size

It is important to ensure that the size of the sample is sufficient to adequately represent the population of interest. Table 2.2 provides a useful guide to determining the appropriate sample size for a study (without having to refer to formulae). To determine the sample size required, refer to the table and identify the size of the population of interest and the margin of error (degree of accuracy) that is acceptable. A margin of error of 0.05 means that the sample proportion for a measured outcome is plus or minus 5% of the actual proportion in the population of interest.

For example, for a population of 1,000 athletes, a sample size of 278 athletes is required to obtain a proportion on any question that is within plus or minus 5% of the population of 1,000 athletes at a confidence level of 95%. That means that if 25% of the 278 athletes had a favorable disposition towards doping, we could be very confident (in fact 95% sure) that between 20% and 30% of athletes in the whole population had a favorable disposition towards doping. [Further advice on sampling error and confidence intervals should be sought from quantitative researchers].

Table 2.2: Sample size calculation (95% confidence level)

Population size	Margin of error			
	0.05	**0.035**	**0.025**	**0.01**
50	44	47	48	50
100	80	89	94	99
150	108	126	137	148
200	132	160	177	196
250	152	190	215	244
300	169	217	251	291
400	196	265	318	384
500	217	306	377	475
600	234	340	432	565
700	248	370	481	653
800	260	396	526	739
900	269	419	568	823
1,000	278	440	606	906
1,200	291	474	674	1067
1,500	306	515	759	1297
2,000	322	563	869	1655
2,500	333	597	952	1984
3,500	346	641	1068	2565
5,000	357	678	1176	3288
7,500	365	710	1275	4211
10,000	370	727	1332	4899
25,000	378	760	1448	6939
50,000	381	772	1491	8056
75,000	382	776	1506	8514
100,000	383	778	1513	8762
250,000	384	782	1527	9248
500,000	384	783	1532	9423

* Adapted from: http://www.research-advisors.com/tools/SampleSize.htm

It is important to consider the number of sub groups of interest in determining the sample size required. Each sub group is treated as a population in determining the sample size. In the example above, if gender is of interest in the answer to a question, then samples of 278 males and 278 females would be required (i.e., total sample size is 556). However, it is acknowledged that in many cases it is not possible to obtain large numbers of sub-groups in any sample. Nevertheless, meaningful comparisons can be made between sub-groups and meaningful estimates can be made about the population of interest even with smaller samples than indicated in the table.

2.5 Response Rate

An important factor to be considered when setting out to achieve a certain number of completed interviews is the expected 'response rate'; that is, the percentage of athletes invited to complete a questionnaire who actually do so. For a representative sample of the population of interest, the higher the response rate the more likely the results are representative of the population of interest. The response rate is usually higher with more interaction between the athletes and the interviewers/researchers.

In calculating a response rate, a cut-off date for return of surveys or ceasing interviewing needs to be set. The formula for calculating the response rate for a mail survey is: the number of completed questionnaires returned divided by the number of surveys mailed-out minus the 'returned-to-sender' and apologies received for non-completion, multiplied by 100. That is: % response rate = completed questionnaires returned / (surveys mailed-out – 'returned-to-sender' – apologies received for non-completion) x 100. For example, say 5000 surveys were mailed-out, 1300 completed questionnaires were returned, 200 were 'returned-to-sender' and 50 apologies were received for non-completion. The response rate achieved is 30.5% (i.e., 1450 / (5000-200-50) x 100).

The formula for calculating the response rate for a telephone survey is: completed interviews / completed interviews + contacts with eligible athletes that did not complete an interview (i.e., refused to participate + terminations during interviewing – appointments) x 100. The formula for calculating the response rate for a face-to-face (intercept) survey is: completed questionnaires returned / contacts with eligible athletes that did not complete a questionnaire (i.e., refused to participate + terminations) x 100. The formula for calculating the response rate for an online survey is: completed questionnaires returned / (emails sent out – 'returned-to-sender' emails – apologies received for non-completion) x 100.

As a guide, if the target population is elite athletes, the acceptable response rates are 50% for face-to-face surveys, 40% for telephone surveys, and 25% for mail and online surveys. For non-elite athletes, higher response rates should be achievable.

It is important when estimating a required number of completed interviews to have a good idea of the anticipated response rate. For example, if a sample of 200 athletes was required from a population of 5,000 athletes, and the expected response rate was 40%, then we would send an invitation to a random or stratified sample of 500 of these athletes to obtain 200 completed interviews. However, if the actual response rate was 30%, this would yield only 150 athletes, which would then require further invitations or using the obtained sample size but with a larger margin of error. Hence, when in doubt, it is better to assume a lower response rate than might be expected so as to ensure a statistically sufficient sample size in the first instance.

2.6 A Practical Example of the Process in Undertaking a Survey of Elite Athletes by a NADO

This example illustrates the process as we have conducted surveys in Australia.

Main purpose of study: To conduct a survey of elite athletes in Australia to establish the proportion of these athletes with a positive predisposition to doping.

Third party recruited: A third party (a University) is commissioned to conduct the data collection (and perhaps the analysis of the de-identified data).

Study design: Given the sensitive nature of this study a nationwide mail survey of Australian elite athletes is chosen for data collection.

Population of interest: Elite athletes in Australia (numbering approximately 3,000 athletes).

Main measures: A sample questionnaire of several main measures is shown in Section 1.2. The measure of susceptibility to doping is presenting athletes with the following scenario "*If you were offered a banned performance enhancing substance under medical supervision at low or no financial cost and the banned performance enhancing substance could make a significant difference to your performance and was currently not detectable"* and asking the amount of consideration they would give to the offer and their confidence in refusing the offer.

Sample size: Given that the size of our population (i.e., 3,000 athletes) is not listed in Table 2.2 ('Sample size calculation'), refer to the next highest value listed which is 3,500. Allowing a margin of error of ± 5% for determining the proportion of athletes with a positive predisposition to doping, the sample size required is 346.

Source of elite athletes' mailing addresses: NADO in Australia (i.e., Australian Sports Anti-Doping Authority).

Sampling procedure: The formula for calculating the number of athletes to include in the mail-out is: required sample size x 100 / anticipated response rate). Hence, given a required sample size of 346 and an anticipated response rate of 25%, a random sample of 1,384 athletes (i.e., 346 x 100 / 25) is required to be selected for mail-out. The method for selecting the 1,384 athletes from the Australian Sports Anti-Doping Authority's database may well be selecting every second name on the database. Prior to selecting athletes, any non-elite athletes on the database need to be excluded.

Data collection procedure: Given that the outcome measures (i.e., susceptibility to doping) are of a sensitive nature, an independent third party (a university) is commissioned by the Australian Sports Anti-Doping Authority to undertake the study. To preserve the confidentiality of the athletes' address details, personnel from the Australian Sports Anti-Doping Authority would be responsible for sticking the address labels on the questionnaire packages (containing the questionnaire, a covering letter from the third party, and a reply-paid envelope addressed to the third party). The third party's covering letter invites athletes to participate in a "survey of elite athlete's attitudes and opinions on sport issues". Athletes are informed that the study is commissioned by the Australian Sports Anti-Doping Authority and is being conducted by the third party, and to return the completed survey to the third party for processing. Athletes are informed that their responses will be kept confidential, that they could not be identified from the questionnaire, and that only group data would be reported. A reminder letter is sent approximately two weeks after the initial mail-out. The closing date for return of the completed questionnaires for inclusion in the study is set at 6 weeks from the initial mail-out.

Data analysis: De-identified data could be provided to a NADO where they have staff with data analysis expertise. However it is preferable (as in this case), that the third party conduct the analyses.

Timeline: This 5-month study consists of the following components:

T1: Project management (20 weeks).

T2: Advertise for and commission research to a third party (4 weeks).

T3: Obtain ethics approval (3 weeks).

T4: Preparing and printing of questionnaires, mail-out of the survey and reminder letter (3 weeks).

T5: Data collection period (6 weeks).

T6: Data coding, cleaning, entry and analysis (4 weeks).

T7: Report writing (2 weeks).

T8: Review and approval of report. Submission of final report (2 weeks).

	Weeks																			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
T1																				
T2																				
T3																				
T4																				
T5																				
T6																				
T7																				
T8																				

SECTION 3: DATA ANALYSES AND INTERPRETATION FOR ACTION

This section suggests basic data analyses for all the questionnaire measures and implications of various results.

In this section we provide overall directions for analysis and interpretation. However, we do not include statistical methods. It is envisaged that as far as possible, agencies will have or will seek assistance from a researcher for such analyses. Nevertheless, as indicated by the example distributions in the following Section 4, sophisticated analyses are not required to obtain a good understanding of athletes' beliefs about and dispositions towards doping. Section 4 also includes tables of Australian elite athletes' responses to a number of questions, along with comments on what actions, if any, an anti-doping agency could take if they obtained such results amongst their athletes.

3.1 Main Analyses

Overall, the tables provided in Section 4 illustrate the sorts of basic analyses to be conducted on the survey data; that is, the first step would be to calculate and draw up tables showing the percentages of athletes nominating each of the response categories for each question (including a percent 'no response' or 'don't know' where applicable). Table 3.1 below illustrates the basic analysis that should be conducted for all or most questions in the questionnaire; i.e., what percentage of athletes nominated each of the 'fair' response categories for the question 'How fair is (your NADO) in terms of treating all athletes equally?'

Table 3.1: Perceived fairness of (name of NADO) in terms of treating all athletes equally

	N=1237 **%**
Very fair	41.0
Fair	48.9
Unfair	5.7
Very unfair	1.8
No response	2.6
Total	**100.0**

It is clear from this table that the vast majority of athletes in this sample believe that the agency treats all athletes equally. The clear implication is that the agency should continue to act in such a way that demonstrates that this is the case. This may involve investigating the bases for athletes' positive perceptions so that these can be reinforced.

However, many measures consist of multiple items. Although in some cases it may be of some interest to look at the distribution of responses to each of these items, in most cases the interest is in the overall score on that measure (see also Section 4).

3.2 Analyses of Multiple Item Scales

A number of measures described in Section 4 are multiple-item scales, where the individual's score on that measure is calculated by adding their responses for all of the items. This approach is most common for the personality measures. Furthermore, some of these multiple-item scales may contain several subscales. For example, consider the 21-item Self-Presentational Concerns measure:

Q#. Athletes have different perceptions as to how others may perceive them. The following statements capture these differences in self-perceptions. For each of the following statements, circle the number that best represents the extent to which the item corresponds to you with respect to the main sport you currently compete in.

During competition I worry that other people may perceive me as ….

		Never				Always
AAU1:	Appearing untalented	1	2	3	4	5
AAU2:	Appearing not to perform or execute perfectly	1	2	3	4	5
AAU3:	Appearing athletically incompetent	1	2	3	4	5
AAU4:	Appearing underskilled	1	2	3	4	5
AAU5:	Appearing to lack ability	1	2	3	4	5
AAU6:	Appearing unqualified	1	2	3	4	5
PA1:	Appearing flabby	1	2	3	4	5
PA2:	Appearing physically untoned	1	2	3	4	5
PA3:	Appearing ugly or unpleasant in my uniform	1	2	3	4	5
PA4:	Appearing physically unattractive	1	2	3	4	5
PA5:	Appearing too small or too big in my uniform	1	2	3	4	5
FLE1:	Appearing exhausted	1	2	3	4	5
FLE2:	Appearing fatigued	1	2	3	4	5
FLE3:	Appearing tired	1	2	3	4	5
FLE4:	Appearing to lack energy	1	2	3	4	5
MCI1:	Appearing to lose composure	1	2	3	4	5
MCI2:	Appearing unfocused	1	2	3	4	5
MCI3:	Appearing nervous under pressure	1	2	3	4	5
MCI4:	Appearing to lack necessary focus	1	2	3	4	5
MCI5:	Appearing underactivated	1	2	3	4	5
MCI6:	Appearing distressed	1	2	3	4	5

AAU = appearing athletically untalented;
PA = physical appearance;
FLE = fatigue/lacking energy;
MCI = mental composure inadequacies

This personality measure includes four types of concerns in four subscales:

- AAU: Appearing athletically untalented, six items;
- PA: Physical appearance, five items;
- FLE: Fatigue/lacking energy, four items; and
- MCI: Mental composure inadequacies, six items.

Hence each athlete will obtain four scores where each subscale is calculated by adding the response category numbers for that type of concern. Because the subscales vary in number of items, the minimum and maximum scores for each subscale will vary as follows:

	Minimum scores	Maximum scores
Appearing athletically untalented, six items	6	30
Physical appearance, four items	5	25
Fatigue/lacking energy, five items	4	20
Mental composure inadequacies, six items	6	30

One common practice where there are different numbers of items in each subscale is to divide each athlete's total subscale score by the number of items, so that the absolute numbers for the different subscales are directly comparable. For example, suppose an athlete scores: 17 on AAU; 16 on PA; 15 on FLE; and 18 on MCI. On which subscale do they score highest? Computing this athlete's average subscale scores allows an easier comparison between these scores: AAU: 17/6 = 2.7; PA: 16/4 = 4; FLE: 15/5 = 3; MCI: 18/6 = 3. That is, this athlete scores highest on 'physical appearance' concerns and lowest on 'appearing athletically untalented'.

The distributions of these mean subscale scores for all athletes in the sample can then be presented in percentage distributions as for single item measures. However, because they are mean scores, they will not be integers and will need to be grouped (for example: 1 = 1-1.4; 2 = 1.5 – 2.4; 3 = 2.5 – 3.4; 4 = 3.5 – 4.4; 5 = 4.5 – 5).

Alternatively, and perhaps more commonly, the distributions of scores on each subscale can be categorized into tertiles or quartiles. Tertiles refers to assigning the top third of scorers a "3", the middle third of scorers a "2" and the lowest third a "1". Categorizing by quartiles breaks the sample into 4 categories: the highest 25%; the next highest 25%; the next 25%; and the lowest 25%. For example, suppose that scores on Physical appearance in a sample of 200 athletes looked like this:

Table 3.2: Possible distribution of scores on Physical Appearance (N = 100)

Total Score on PA	Frequency (number of athletes with each score)	Cumulative frequency	
20	3	3	
19	5	8	
18	8	16	
17	11	27	
16	12	39	
15	10	49	
14	14	63	**Tertile 1**
13	22	85	
12	26	111	
11	24	135	**Tertile 2**
10	22	157	
9	14	171	
8	6	177	
7	8	185	
6	7	192	
5	5	197	
4	3	200	**Tertile 3**
Total	**200**		

This distribution shows that almost one third (n = 63) score 14 and above (they are assigned a score of "3"), those scoring 11, 12 or 13 constitute approximately the next third (n = 72), and are assigned a score of "2", whilst those scoring 4 – 10 constitute the bottom third (n = 65), and are assigned a score of "1". These three categories can also be designated 'high', 'medium' and 'low' respectively.

By using these three categories rather than the total scores, it is much simpler to look at whether these three groups differ in their answers to various questions. For example, an analysis of the amount of consideration athletes would give to an offer of a banned performance-enhancing substance by concern for Physical appearance could look like this:

Table 3.3: Amount of consideration athletes would give to an offer of a banned performance-enhancing substance by concern for Physical Appearance

	High concern %	Medium concern %	Low concern %
A lot of consideration	16	11	6
Some consideration	10	10	7
Total some or a lot	***26***	***21***	***13***
A little consideration	24	19	16
None at all	50	61	71
Total	**100**	**100**	**100**

Table 3.3 shows that concern for Physical appearance is positively related to how much consideration the athlete would give an offer of a banned performance enhancing substance; that is, the higher the concern, the more consideration would be given to the offer: 26% of athletes with a high concern would give the offer 'some' or 'a lot' of consideration, versus 21% of medium concern athletes and 13% of low concern athletes. [Statistical tests (such as chi square) can then be used to determine whether these differences can be considered 'real' or just due to chance.]

Overall, as a general principle we recommend that multiple item subscale scores be grouped into tertiles or quartiles for analyzing the relationship between those subscales and other scores.

3.3 Cross-tabulations (Contingency Tables)

As indicated in the above example, cross-tabulations are useful for analyzing results by sub-groups of interest. In general, each of the questions could be analyzed by athlete type, level, team vs individual sports, gender and age. These analyses are useful to identify sub-groups that may have substantially less knowledge than others, or have very different beliefs about the likelihood of being tested and the consequence of doping, or are more susceptible to doping than other groups. For example, one might be interested to know whether the proportion of males who are low, medium, or high on doping susceptibility is similar or different to female athletes. That is, as in the example above for Physical appearance concern, crosstabs allow the examination of associations between two variables.

For example, using the following measure of doping susceptibility, an Australian sample of athletes revealed the results in the table below for males versus females:

Question: Which of the following most applies to you?

1. *never considered using a banned performance-enhancing substance;*
2. *at one stage thought briefly about using a banned performance-enhancing substance;*
3. *at one stage thought quite a bit about using a banned performance-enhancing substance;*
4. *still think occasionally about using a banned performance-enhancing substance;*
5. *briefly used a banned performance-enhancing substance in the past but no longer do so;*
6. *occasionally use a banned performance-enhancing substance now for specific purposes; and*
7. *regularly try or use banned performance-enhancing substances.*

Athletes who "*never considered using a banned performance-enhancing substance*" were classified as 'not susceptible'; all other participants were classified as susceptible. Table 3.4 below shows that in this sample, 8% of male athletes were classified 'susceptible' versus 4% of females.

Table 3.4: Susceptibility to doping by gender

	Male	Female	Total
	%	%	%
Susceptible	8	4	6
Not Susceptible	92	96	94
Total	**100**	**100**	**100**

Hence it appears that males are more likely to be susceptible to doping than females. This would suggest that greater attention be paid to male athletes than female athletes in anti-doping efforts. However, we would also need to ensure that this difference was 'statistically significant'. In this case, a chi square test showed that the difference could be considered a 'real' difference and not just due to chance. It is recommended that all contingency tables be subject to statistical testing. [Statistical advice should be sought with respect to the types of test appropriate to various.]

Another example is shown in Table 3.5 for how much consideration athletes at three different levels of competition would give to an offer of doping under certain circumstances. Table 3.5 shows that a substantial percentage (~40%) of athletes at each level would consider such an offer, but that substantially more National level athletes would give the offer consideration (47.5%) compared to State or regional athletes (37.2%) and Olympians or world champions (38.2).

Table 3.5: Amount of consideration athletes would give to an offer of a banned performance-enhancing substance

	Olympics/ World	National	State/ Regional	Total sample
	N=707	N=459	N=62	N=1,237
	%	%	%	%
A lot of consideration	8.1	7.6	6.5	7.9
Some consideration	8.2	9.2	6.5	8.4
A little consideration	21.9	30.7	24.2	25.1
Total would consider	***38.2***	***47.5***	***37.2***	***41.4***
None at all	59.3	51.6	61.3	56.7
No response	2.5	0.9	1.6	1.9
Total	**100.0**	**100.0**	**100.0**	**100.0**

Hence, although all three levels require proactive efforts to reduce the proportion who would give this offer some consideration, additional efforts could be directed at National level athletes.

Table 3.6 below provides an overview of the distribution of responses to the perceived likelihood of being tested in and out of competition across three levels of competition. These data show that very few National or Olympic/world championship athletes believe it is 'not at all likely' they will tested out-of-competition (4% and 7.4%, respectively) or in-competition (<1% for both samples), while almost 1 in 4 State or regional athletes believe it is 'not at all likely' they will be tested in-competition, and 1 in 10 believe it is 'not at all likely' they will be tested out-of-competition.

It would be desirable to increase the proportion at all levels believing that being tested was 'very' likely rather than 'quite' likely. Although there may be valid reasons for perceived low likelihoods for some athletes at lower levels, these findings suggest that testing efforts be increased if possible, and accompanied by widespread publicity. If increased testing is not possible, steps could be taken to increase the visibility of testing that is done, along with continuous mention of testing in relevant situations and in interviews with the media.

Table 3.6: Perceived likelihood of being tested in and out of competition

	Olympics/ World	**National**	**State/ Regional**	**Total sample**
	N=707	**N=459**	**N=62**	**N=1,237**
	%	**%**	**%**	**%**
Out of competition:				
Very likely	46.0	22.7	9.7	35.3
Quite likely	24.6	22.2	14.5	23.2
A little likely	16.7	23.7	22.6	19.7
Not likely	7.6	23.3	30.6	14.7
Not at all likely	4.0	7.4	22.6	6.1
No response	1.0	0.7	0.0	0.9
Total	**100.0**	**100.0**	**100.0**	**100.0**
In competition:				
Very likely	52.2	36.8	25.8	45.0
Quite likely	28.6	29.6	25.8	28.9
A little likely	13.2	21.6	16.1	16.5
Not likely	4.1	10.5	22.6	7.4
Not at all likely	0.8	0.9	9.7	1.3
No response	1.1	0.7	0.0	0.9
Total	**100.0**	**100.0**	**100.0**	**100.0**

3.4 Evaluating Impact of Actions

These questionnaire modules are also useful for assessing the impact of education programs and other actions taken by agencies. For example, suppose an agency had undertaken additional efforts in 2016 to increase elite athletes' perceived likelihood of being tested out-of-competition. Survey results at the end of 2016 can then be compared with survey results obtained in 2015. Alternatively, athletes might be surveyed prior to undergoing an education program (a 'pre' survey) that includes an emphasis on likelihood of being tested out-of-competition, and then surveyed immediately after completing the program (a 'post' survey). The results for these 'pre' and 'post' education program surveys might look like this:

Table 3.7: Perceived likelihood of being tested out-of-competition

	Pre program %	Post program %
Very likely	34	42
Quite likely	28	36
A little likely	20	16
Not likely	12	6
Not at all likely	6	0
Total	**100**	**100**

The results in Table 3.7 suggest that the program appears to have been effective in increasing athletes' perceived likelihood of being tested out-of-competition: before the program, 62% of athletes believed it 'quite' or 'very' likely they could be tested out-of-competition; after the program this increased to 78%. Furthermore, after the program, none believed that it was 'not at all likely' (versus 6% pre). Given a sufficient sample size it is likely that a statistical test would show that the program had a real and effective impact on athletes' perceptions of testing likelihood.

It should be a matter of course that athletes complete questionnaires prior to and immediately after anti-doping programs to assess at least the immediate impact of the program. If possible, the same athletes can be contacted and surveyed say 6 or 12 months later to assess whether any immediate changes were sustained. For example, the above athletes might be surveyed six months later only to find that their perceptions had reverted to earlier levels as in Table 3.8. Such data would suggest that athletes need continual reminders of testing likelihood (which are often referred to as 'boosters').

Table 3.8: Perceived likelihood of being tested out-of-competition

	Pre program	Post program	Six months later
	%	%	%
Very likely	34	42	37
Quite likely	28	36	29
A little likely	20	16	21
Not likely	12	6	10
Not at all likely	6	0	3
Total	**100**	**100**	**100**

3.5 Resources for Action

There are a number of sources worldwide for anti-doping resources. The WADA website in particular should be looked at in detail. The various toolkits and programs on the WADA site cover a wide variety of topics, as well as much information and many resources for athletes. In addition to general anti-doping information (e.g., dangers of doping), athletes can access information regarding therapeutic use exemptions (TUEs), athlete whereabouts, biological passport and code compliance. Also, there are a number of countries that have long been active in anti-doping efforts, including the Scandinavian countries, Canada, Australia and the UK. Listed below are hyperlinks (ctrl + click) to the major English language sites. There is also a website that lists all NADOs around the world (see below).

- WADA Education and Awareness: this website contains toolkits with information that is tailored for coaches, teachers, program officers, sport physicians and doping control officers.
- ASADA Education: this website offers a range of resources for individuals and organizations, including an online learning course, videos, and lesson plans and resources for teachers.
- USADA Resources and Services (e.g., including education): these websites contains detailed information for healthcare practitioners and coaches (e.g., therapeutic use exemptions, whereabouts information), as well as anti-doping programs including web tutorials and online webinars.
- UKAD Learning Zone and Resources: these websites provide interactive courses and quizzes to learn about clean sport, courses for those people interested in becoming an anti-doping advisor, and various documents and policies regarding anti-doping (e.g., rules, guides for coaches).
- Other National Anti-Doping Organizations (NADO): this website provides a complete list of anti-doping organizations from around the world who are responsible for testing athletes and facilitating anti-doping education in their country.
- Teaching Values: An Olympic Education Toolkit. A Project of the International Olympic Committee, Lausanne, Switzerland. 2007 IOC.

3.6 Concluding Comment

Overall, it is recommended that agencies who have conducted little research with athletes begin with a limited questionnaire and a sample of most accessible athletes. A 'basic' first start questionnaire is shown in Section 1.2. Furthermore, while we can offer suggestions for action given certain percentages nominating various responses, the agency itself and its advisors are best placed to interpret the data in their context. University departments relating to sports psychology, physical education, and similar titles, are a potential source of advice and advisors. The co-authors of this report (Drs Jalleh and Gucciardi) may also be available to provide advice, and particularly pertaining to this research package.

SECTION 4: DESCRIPTION OF ALL CONSTRUCTS MEASURED IN THE STANDARD QUESTIONNAIRE, ALONG WITH EXTRA ITEMS RELEVANT TO DOPING RESEARCH, INCLUDING EXAMPLES OF RESULTS OBTAINED IN AN AUSTRALIAN SAMPLE OF ELITE ATHLETES

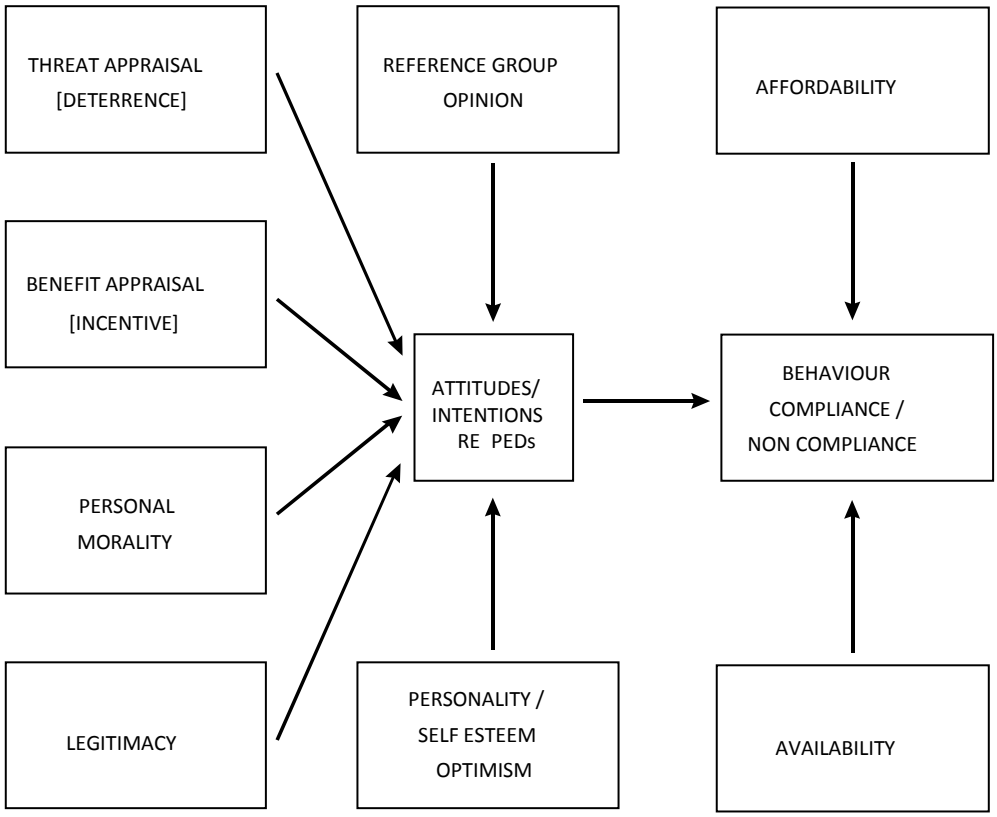
This section provides a comprehensive overview of the rationale for selecting the measures in the standard questionnaire, a description of the construct being measured by the questionnaire items, and examples of results obtained in a sample of elite Australian athletes.

4.1 Factors Influencing an Athlete's Susceptibility to and Use of Doping Methods: The Sport Drug Control Model

The Sport Drug Control Model was initially developed in the late 1990s (by Profs Donovan and Egger) for the Australian Sport Drug Agency (ASDA as it was then known; now ASADA: Australian Sport Anti-Doping Agency) as part of the Agency's preparation for the Sydney Olympics. In collaboration with then ASDA CEO Mendoza and staffer Kapernick, the Model was published in 2002 in the journal *Sports Medicine*.

The Sport Drug Control Model was based on cognitive decision models from social psychology, principles of public health communication and behavior change campaigns, and the then limited research on athletes' attitudes towards and use of banned performance enhancing substances. Hence the model incorporated: (1) personal morality and (2) legitimacy from the legal compliance models; (3) potentially relevant personality factors; and (4) threat appraisal; (5) non-compliance benefit appraisal; and (6) reference group influences, from various cognitive decision models such as Protection Motivation Theory, the Health Belief Model, Fishbein's Theory of Reasoned Action, and Ajzen's Theory of Planned Behavior (see Figure 4.1). It is of note that these six inputs to the athlete's decision with respect to drug usage, are all to varying degrees, subject to modification via various intervention strategies. The model also included two 'market factors': availability and affordability. While the model's primary focus was on athletes, Donovan et al. noted that the model was not unique to athletes, but could be adapted and applied to assessing attitudes towards doping (and use of where relevant) in any sub-populations, and particularly coaches, trainers and others in the athlete's entourage or with influence over them. The authors also noted that the relative importance of the various domains may vary by athlete demographics, level and type of sport, situational circumstances and national culture.

Figure 4.1: Sport Drug Control Model (Donovan et al., 2002)

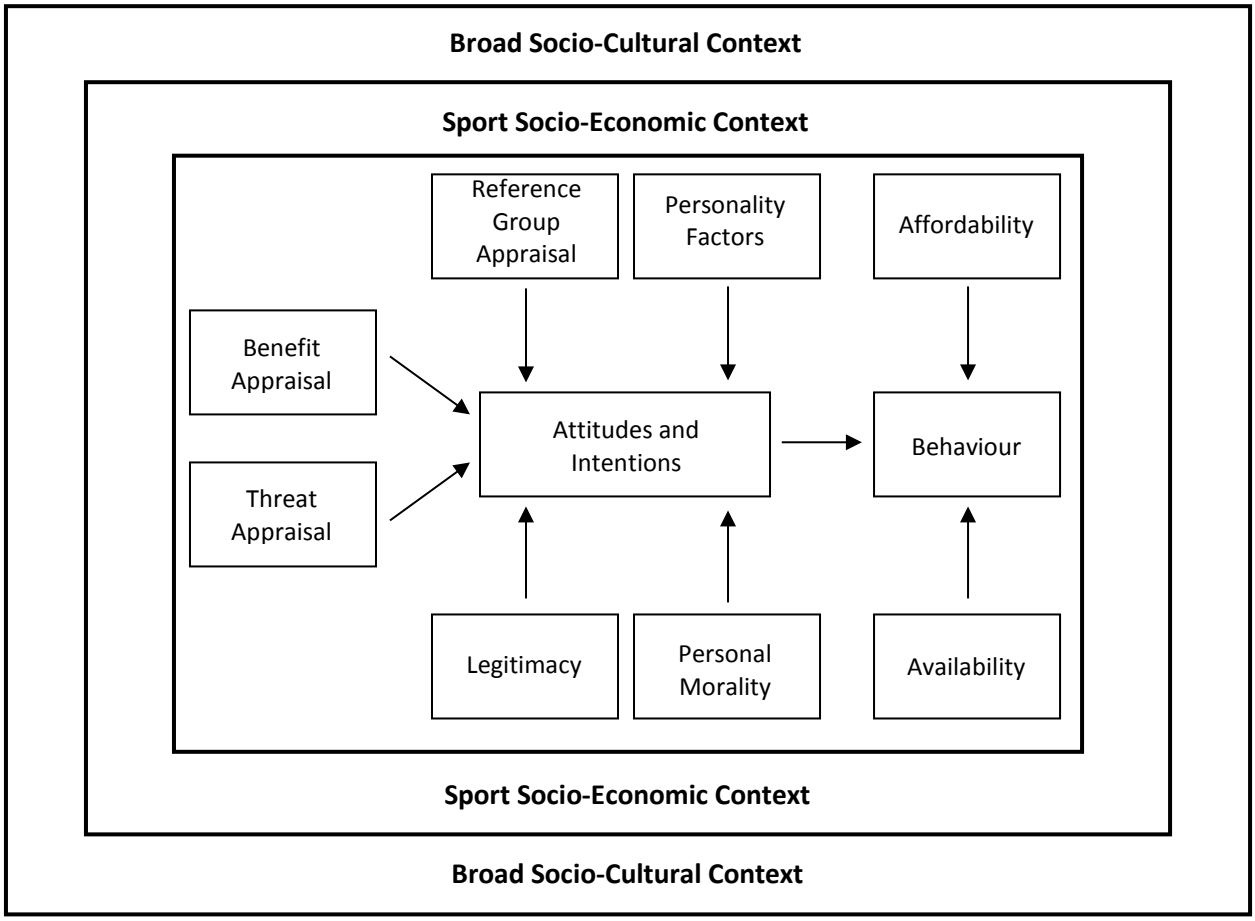


The Sport Drug Control Model was extended in a 2009 publication to more specifically acknowledge the importance of broader sporting and societal forces that impact on individuals' beliefs, attitudes and values within a doping context (see Figure 4.2).

In particular the extended model included broad societal and sport factors such as cultural differences between countries and sub populations within countries (e.g., individualism vs collectivism); the medicalization of society in general and in sport; cosmetic and cognitive enhancement in general; the use of illicit recreational drugs; globalization in general and in the media and sport in particular; the increasing commercialization of sport, including the Olympics; scientism in sport; and the intensification of sporting schedules.

The extended model shows that interventions are necessary at these broader levels, not just at the level of targeting individual athletes.

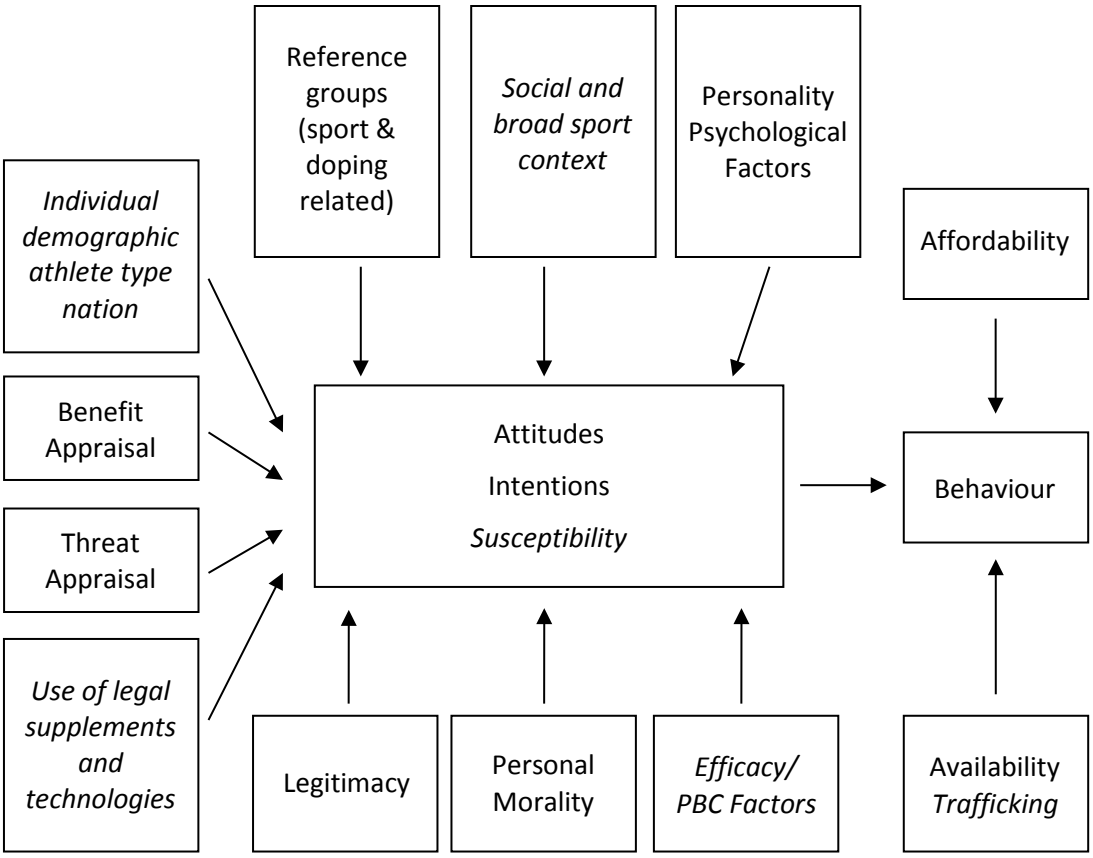
Figure 4.2: Extended Sport Drug Control Model (Donovan, 2009)



Since publication of the Sport Drug Control Model in 2002 there has been substantial social science research in doping (with much of that in recent years stimulated and funded by WADA's Social Science Research grants program). Hence a recent review for WADA (Donovan, Jalleh & Gucciardi, 2014) not only looked at what we now know – and would like to know more about – in each of the original domains, but also whether the research identified additional domains relevant to athletes' decisions to dope or not to dope. As a result of that review, the broader societal domains were added to the model, along with more explicit reference to an efficacy domain (related to Perceived Behavioral Control; TBC), along with the use of 'gateway' substances (see Figure 4.3). The proposed questionnaire will provide standardized measures for each of the domains of the model.

There have been two 'tests' of the original SDCM, with the results generally supporting the relevance of the model's constructs in predicting athletes' doping behavior and doping susceptibility. For those interested in more detail, the original and extended Model (Donovan et al., 2002; Donovan, 2009) and the two tests of the Model (Gucciardi, Jalleh & Donovan, 2011; Jalleh, Donovan & Jobling, 2014) are available from the authors.

Figure 4.3: Updated Sport Drug Control Model (additions/elaborations shown in italics) (Donovan, Jalleh & Gucciardi, 2014)



4.2 Questionnaire Modules

Using recent reviews of the anti-doping literature and our own questionnaires related to the Sport Drug Control Model, we identified questionnaire items and scales currently used to measure the constructs in each of the domains of the Model, along with measures of overall attitude, intention and doping susceptibility. In general, but not only, the most commonly used items with published reliability and at least face validity have been selected for inclusion in the questionnaire modules.

However, athletes' completion of questionnaires is very much influenced by questionnaire length. Hence, given the large number of questionnaires in existence that measure various components of the Model, and given that many such questionnaires contain many individual items, we have focused our attention on providing a basic or minimal set of questions for each domain in the Model. However, we have also provided additional questionnaire modules where the anti-doping agency may wish to research a particular area in greater depth. For example, with respect to personal morality, at a basic level, the athlete's moral stance with respect to doping can be assessed in two items. However, for more in-depth research, an agency may also wish to measure moral identity, or even more comprehensively, moral climate within the athlete's group or team, or even moral disengagement. Similarly, there are a number of relevant multi-item personality inventories (e.g., perfectionism; fear of failure; achievement motivation; etc). Hence we provide these, but suggest their use be limited to specific purpose research.

Overall, agencies will be able to include basic measures of all domains in their survey (recommended where little is known about the population of interest) or select only those of interest. The Research Package includes a description of each of the constructs in the various domains so that agencies can choose those of specific reference to intervention evaluations.

The resource contains the following modules:

A. Sport Drug Control Model Modules

1. Morality and cheating.
2. Legitimacy perceptions.
3. Beliefs about the benefits of doping.
4. Beliefs about the harms of doping and the consequences if caught.
5. Personality/psychological factors.
6. Beliefs about reference groups' endorsement of doping methods/substances.
7. Beliefs about the availability of, and relevant authorities' control over trafficking of doping methods/substances.
8. Beliefs about the affordability of doping methods/substances.
9. Beliefs about other athletes' attitudes towards and use of doping methods/substances.
10. Beliefs about societal influences on doping.

B. Athlete Characteristics Modules

11. Performance-enhancing drug use.
12. Use of nutritional supplements and other permitted technologies.
13. Demographics and sporting background.
14. Overall attitude to doping; intention to dope in the near future; overall susceptibility to doping.

In the following sub-sections, the various constructs for each module are first defined and described. The emphasis in each module is on the basic measure rather than optional extra items. The extra items are included should an Agency wish to conduct more intensive research within a particular area. All of the questions in the modules have been used in anti-doping research, and, in the case of multiple-item scales, have established validity and reliability.

Score distributions of a sample of elite Australian athletes are included for a number of the questionnaire items. These data were obtained in 2004. Hence they are not intended to portray what might be the findings in 2015. These distributions are included primarily to illustrate how data are analyzed and the implications for action of the results. They are not intended to provide a formal benchmark for Agencies' athletes' responses. Nevertheless, they could provide a helpful comparison.

It should be highlighted that in the absence of 'normative' scores for the modules across different athlete populations, suggestions for action are based on logic and experience. Nevertheless, using attributes such as the extent to which a construct predicts doping susceptibility and the percent of the sample giving a clearly undesirable score, we have included comments about the sorts of results that indicate actions need to be taken by an Agency.

The module questionnaire items are re-listed in Section 5 so they may be easily extracted and combined for practical use.

A. Sport Drug Control Model Modules

A1. Morality and Cheating

As conceptualized in the original Sport Drug Control Model (Donovan et al., 2002) and its extension (Donovan, 2009), personal morality refers to one's moral standing with regard to the use of banned performance enhancing substances or methods in athletic pursuits.

A1.1 Minimum/basic item

Moral stance

Definition: The extent to which an athlete believes that doping is morally right or wrong (Donovan et al., 2002).

Item:

Q#. Regardless of whether you believe performance enhancing substances or methods (PESM) should be banned or allowed, which of the following statements best describes your own personal feelings about deliberately using banned PESM?

I believe deliberately using banned PESM to improve performance is morally wrong under any circumstances 1
I believe deliberately using banned PESM to improve performance is morally OK under some circumstances, but wrong under others..... 2
I believe deliberately using banned PESM to improve performance is morally OK under any circumstances 3

Distribution of responses in an Australian sample of elite athletes:

Table 4.1 shows that the vast majority of this sample of athletes felt that using banned performance-enhancing substances to improve performance is morally wrong (89.1%). Less than one percent of athletes felt that performance-enhancing substances use is morally ok under any circumstances.

Table 4.1: Personal moral stance on banned performance-enhancing substances use (N=1,237)

	%
I believe deliberately using banned performance-enhancing substances to improve performance is morally wrong under any circumstances	89.1
I believe deliberately using banned performance-enhancing substances to improve performance is morally OK under some circumstances, but wrong under others	9.5
I believe deliberately using banned performance-enhancing substances to improve performance is morally OK under any circumstances	0.6
No response	0.9
Total	**100.0**

Comment and implications for action:

These data suggest a strong moral norm against doping in these athletes. We would suggest that action would be required where 70% or less nominated "I believe deliberately using banned performance-enhancing substances to improve performance is morally wrong under any circumstances".

Such action would involve introducing concepts of morality, and moral and ethical reasoning into anti-doping education programs. WADA's programs contain elements of morals and ethics, but to date there are few available such programs specifically in an anti-doping context. One solution is to introduce athletes to general ethical decision making principles. The authors have developed such a program for alcohol, tobacco and drug use, and are considering a program for athletes. Elbe and Brand (2014) developed and tested modules of scenarios for ethical reasoning about using banned PESs, but their evaluation of the effects of their program yielded results that were ambiguous. The IOC released in 2007 a publication: *Teaching Values: An Olympic Education Toolkit. A Project of the International Olympic Committee, Lausanne, Switzerland*. This document can provide a basis for values and ethics modules.

General comment on cut-off points:

As noted above, there are no normative data nor definitive rules about what percentage of athletes holding a particular view should or should not warrant action. However, in some cases, the implications would be self-evident. For example where overwhelming percentages – say 85%-95% held a desirable view, and only 10%-15% held an undesirable view, then generally no action would be required. Hence we propose the following as a general rule.

As a general rule, a percentage of 30% reporting an undesired belief or behavior represents a sufficiently large proportion of the population to trigger a fairly rapid increase in the adoption of that undesired belief or behavior (i.e., a 'tipping effect') if some triggering event occurred. It also represents a substantially large percentage of the athlete population that could negatively influence the other 70% via a 'social proof' effect; that is, other athletes becoming aware that many athletes hold that negative view and that view thereby becoming 'normalized' and hence more likely to be adopted. While rapid increases may be unlikely on most of the

measures herein, we would note that a figure of 30% represents a potential threat to anti-doping efforts and should trigger action to investigate the reasons why so many athletes hold this undesired view or behavior, and steps taken to correct the situation. At the very least, such a situation should be monitored via a follow-up survey the next year to assess whether this number is growing (action definitely needed), is steady or declining (investigate and continue monitoring).

A1.2 Optional measures

While moral stance per se is a strong predictor of doping susceptibility and behavior, one's moral stance can be more or less easily weakened depending on one's moral identity and susceptibility to moral disengagement. Hence we include measures for these two constructs that may provide useful information for anti-doping organizations.

(i) Moral identity

Definition: Moral identity refers to the degree to which being moral is central to an individual's sense of self or their identity (i.e., who you are as a person) (Aquino & Reed, 2002). People high in moral identity are more likely to behave in ways that are moral when compared with individuals low in this dimension (Aquino et al., 2009). There two dimensions in the scale below: an internal view of oneself (measured by the five Int items) and a public dimension (measured by the six Sym items). The public dimension of moral identity (symbolization) refers to the ways individuals show their moral identity by actions that are visible to others. Hence people high in symbolization are more likely to behave in ways that publicly show their commitment to a moral sense of self (Aquino et al., 2009).

Items:

Q#. Here are some traits that might describe a person: caring, compassionate, fair, friendly, generous, helpful, hardworking, honest, and kind. The person with these characteristics could be you or it could be someone else. For a moment, visualize in your mind the kind of person who has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this person would be like, answer the following questions.

		Strongly disagree				Strongly agree
Int1:	It would make me feel good to be a person who has these characteristics	1	2	3	4	5
Int2:	Being someone who has these characteristics is an important part of who I am	1	2	3	4	5
Int3:	I would be ashamed to be a person who has these characteristics[a]	1	2	3	4	5
Int4:	Having these characteristics is not really important to me[a]	1	2	3	4	5
Int5:	I strongly desire to have these characteristics	1	2	3	4	5

		Strongly disagree				Strongly agree
Sym1:	I often buy products that communicate the fact that have these characteristics	1	2	3	4	5
Sym2:	I often wear clothes that identify me as having these characteristics	1	2	3	4	5
Sym3:	The types of things that I do in my spare time (e.g., hobbies) clearly identify me as having these characteristics	1	2	3	4	5
Sym4:	The kinds of books and magazines that I read identify me as having these characteristics	1	2	3	4	5
Sym5:	The fact that I have these characteristics is communicated to others by my membership in certain organizations	1	2	3	4	5
Sym6:	I am actively involved in activities that communicate to others that I have these characteristics	1	2	3	4	5

[a] *Reversed scored item*

(ii) Moral disengagement

Definition: Moral disengagement (MDE) refers to the selective use of psychosocial manoeuvres that allow an individual to transgress moral standards without experiencing negative emotions such as guilt and shame, thereby decreasing constraints on immoral behavior (Hodge & Gucciardi, in press). There are eight mechanisms of moral disengagement: moral justification; euphemistic labeling; advantageous comparison; displacement of responsibility; dehumanization; attribution of blame; distortion of consequences; and diffusion of responsibility (Bandura, 1991). For example, a commonly reported disengagement strategy by individuals who have been caught doping is to justify their actions by invoking their opponents' use of performance-enhancing substances (i.e., "everyone else is doing it"; *diffusion of responsibility*). High moral disengagers report low guilt over immoral behaviors (Bandura, 2002) and therefore are more likely to hold positive attitudes to doping and increased doping susceptibility when compared with low disengagers (Hodge, Hargreaves, Gerrard & Lonsdale, 2013). There are two moral disengagement scales available to agencies: the full 32-item scale contains four items measuring each of the eight disengagement mechanisms, whereas the short 8-item scale contains one item for each of the eight disengagement mechanisms.

The 8-item short scale:

Q#. A number of statements describing thoughts that players (or athletes) might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

	Strongly Disagree			Neutral			Strongly agree
MJ: It is ok for players to lie to officials if it helps them or their team	1	2	3	4	5	6	7
EL: Bending the rules is a way of evening things up	1	2	3	4	5	6	7
AC: Shouting at an opponent is okay as long as it doesn't end in violent conduct	1	2	3	4	5	6	7
DF: It is unfair to blame players who only play a small part in unsportsmanlike tactices used by their team	1	2	3	4	5	6	7
DS: A player should not be blamed for injuring an opponent if the coach reinforces such behaviour	1	2	3	4	5	6	7
DC: Insults among players do not really hurt anyone	1	2	3	4	5	6	7
DH: It is okay to treat badly an opponent who behaves like an animal	1	2	3	4	5	6	7
AB: Players who are mistreated have usually done something to deserve it	1	2	3	4	5	6	7

MJ = moral justification;
EL = euphemistic labelling;
AC = advantageous comparison;
DF = diffusion of responsibility;
DS = displacement of responsibility;
DC = distortion of consequences;
DH = dehumanization;
AB = attribution of blame.

Comment:

Agencies can gain an idea of the most common disengagement mechanisms by assessing the percentage of athletes scoring 5 or more on each mechanism. Where there are substantial proportions endorsing a mechanism (i.e., 30% or more), then these are the rationalizations that should be dealt with in ethical reasoning components of education programs.

The full Moral Disengagement scale:

Q#. A number of statements describing thoughts that players (or athletes) might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

		Strongly Disagree			Neutral			Strongly agree
1.	It is okay to be hostile to an opponent who has insulted your team-mate/s	1	2	3	4	5	6	7
2.	Bending the rules is a way of evening things up	1	2	3	4	5	6	7
3.	Shouting at an opponent is okay as long as it does not end in violent conduct	1	2	3	4	5	6	7
4.	A player should not be blamed for using illegal tactics if everyone on the team does it	1	2	3	4	5	6	7
5.	A player is not responsible for acting aggressively if this is encouraged by his/her parents	1	2	3	4	5	6	7
6.	Mocking an opponent does not really hurt him/her	1	2	3	4	5	6	7
7.	It is okay to treat badly an opponent who behaves like an animal	1	2	3	4	5	6	7
8.	If a player is mocked by an opponent, it is the opponent's fault if the player then tries to injure him/her	1	2	3	4	5	6	7
9.	It is okay for players to lie to officials if it helps their team	1	2	3	4	5	6	7
10.	Injuring an opponent is a way of teaching him/her a lesson	1	2	3	4	5	6	7
11.	Compared to physical violence, verbally provoking an opponent is not that bad	1	2	3	4	5	6	7
12.	It is unfair to blame players who only play a small part in unsportsmanlike tactics used by their team	1	2	3	4	5	6	7
13.	A player should not be blamed for injuring an opponent if the coach reinforces such behavior	1	2	3	4	5	6	7
14.	Insults among players do not really hurt anyone	1	2	3	4	5	6	7
15.	If an opponent acts like an animal he/she deserves to be treated like one	1	2	3	4	5	6	7

	Strongly Disagree			Neutral			Strongly agree
16. Players that get mistreated have usually done something to deserve it	1	2	3	4	5	6	7
17. Fouling an opponent is okay if it discourages him/her from injuring your team-mates	1	2	3	4	5	6	7
18. Acting aggressively is just a way of showing you are a tough opponent	1	2	3	4	5	6	7
19. Mocking an opponent is not bad compared to injuring him/her	1	2	3	4	5	6	7
20. A team decision to use unsportsmanlike tactics is just that, and not the responsibility of any individual on the team	1	2	3	4	5	6	7
21. If players are not disciplined for unsportsmanlike conduct they should not be blamed for behaving this way	1	2	3	4	5	6	7
22. Aggressive language toward an opponent does not actually harm anyone	1	2	3	4	5	6	7
23. Some opponents deserve to be treated like animals	1	2	3	4	5	6	7
24. If a player retaliates to something an opponent has done, this is the opponent's fault	1	2	3	4	5	6	7
25. Fighting is okay if it is done to protect a team-mate	1	2	3	4	5	6	7
26. Arguing with officials is a way of keeping them on their toes	1	2	3	4	5	6	7
27. Winding an opponent up is nothing compared to screaming abuse in his/her face	1	2	3	4	5	6	7
28. Players should not take responsibility for negative consequences of their actions if they are following team decisions	1	2	3	4	5	6	7
29. A player should not be blamed for arguing with officials if he/she has seen the coach doing it	1	2	3	4	5	6	7
30. Teasing an opponent does not really hurt him/her	1	2	3	4	5	6	7

	Strongly Disagree			Neutral			Strongly agree
31. If an opponent does not act humanly he/she should be made to suffer	1	2	3	4	5	6	7
32. A player should not be held responsible if he/she retaliates when fouled	1	2	3	4	5	6	7

Scoring Guide: Four items measure each of the eight disengagement mechanisms. An individual's score on each of these mechanisms is the sum of their scores on the four items relating to that mechanism. Dividing each total by 4 would yield a score comparable with the original 1 to 7 scale.

Mechanism	*Items*
Moral Justification	1, 9, 17, 25
Euphemistic Labelling	2, 10, 18, 26
Advantageous Comparison	3, 11, 19, 27
Diffusion of Responsibility	4, 12, 20, 28
Displacement of Responsibility	5, 13, 21, 29
Distortion of Consequences	6, 14, 22, 30
Dehumanization	7, 15, 23, 31
Attribution of Blame	8, 16, 24, 32

Comment:

As for the 8 item scale, the disengagement mechanisms of interest would be those where 30% or more scored an average of 5 or more on the four items of each rationalization mechanism.

(iii) Moral decision-making: attitudes to cheating and other moral actions

Definition: This construct measures attitudes towards moral decision-making in sport, with a focus on cheating behaviors and actions that are not covered in the rules of the sport but enable one to gain an unfair advantage (Lee, Whitehead & Ntoumanis, 2007). There are three subscales: acceptance of cheating (Aoc, 7 items); keeping winning in proportion (Kwp, 6 items); and acceptance of gamesmanship (Aog, 7 items).

Items:

Q#. In the list below there are some things that people have said about cheating and fair play in sport. Please read each one and circle one of the numbers beside it to show how much you agree or disagree with it. Some of these are not very different so you will have to carefully examine each statement.

	Strongly disagree		Neutral		Strongly agree
Aoc1: It is ok to cheat if nobody knows	1	2	3	4	5
Kwp1: Wininng and losing are a part of life	1	2	3	4	5
Aog1: I sometimes try to wind up the opposition	1	2	3	4	5
Aoc2: I would cheat if I thought it would help me win	1	2	3	4	5
Kwp2: It is ok to lose sometimes because in life you don't win everything	1	2	3	4	5
Aog2: It is not against the rules to psych people out so it's ok to do so	1	2	3	4	5
Aoc3: If other people are cheating, I think I can too	1	2	3	4	5
Kwp3: If you win properly, it feels better than if you did it dishonestly	1	2	3	4	5
Aog3: Sometimes I waste time to unsettle the opposition	1	2	3	4	5
Aoc4: I cheat if I can get away with it	1	2	3	4	5
Kwp4: You have to think about the other people and not just winning	1	2	3	4	5
Aog4: If I don't want another person to do well then I put them off a bit	1	2	3	4	5
Aoc5: When I get the chance, I fool the official	1	2	3	4	5
Kwp5: I get annoyed by people trying to "win at all Costs"	1	2	3	4	5
Aog5: It is a good idea to upset your opponent	1	2	3	4	5
Aoc6: I always play by the rules[a]	1	2	3	4	5
Kwp6: Winning is all that matters[a]	1	2	3	4	5
Aog6: I would never psych anybody out[a]	1	2	3	4	5
Aoc7: I would cheat if I thought it would help me or my team win	1	2	3	4	5
Aog7: It is understandable that players swear in the heat of the moment	1	2	3	4	5

[a] *Reversed scored item;*
Aoc = acceptance of cheating;
Kwp = keeping winning in proportion;
Aog = acceptance of gamesmanship

As above, an individual's score for each subscale is the sum of their scores on the items divided by the number of items for each subscale. In the above measure, the elements of sportsmanship that would require emphasizing in anti-doping education programs are those where 30% or more scored 4 or more.

(v) Moral affect

Definition: Moral affect refers to the emotional responses of guilt, shame and embarrassment that arise if caught using performance-enhancing substances. These are the emotions related to feelings of having violated one's moral stance.

Items:

Q#. If you were caught using banned performance enhancing substances or methods, to what extent would you experience the following feelings:

	Not at all				A great extent
1. Ashamed	1	2	3	4	5
2. Embarrassed	1	2	3	4	5
3. Guilty	1	2	3	4	5

Distribution of responses in an Australian sample of elite athletes:

Table 4.2 shows that substantial majorities of this Australian sample indicated they would experience these emotions 'to a great extent' (i.e., rating 1): 'ashamed' (83.4%); 'embarrassed' (82.5%); and 'guilty' (76.4%).

Table 4.2: Emotions experienced if caught using performance-enhancing substances (N=1,237)

	To a great extent:				**Not at all:**	**No response**
	5 %	**4 %**	**3 %**	**2 %**	**1 %**	**%**
Ashamed	83.4	11.0	2.7	0.8	1.0	1.1
Embarrassed	82.5	11.3	3.4	0.8	0.7	1.3
Guilty	76.4	14.0	5.0	1.5	1.9	1.3

Comment:

Given that these emotions are strong indicators of moral stance, we would suggest that where the 'great extent' figure fell below 70% the agency should consider action to increase a moral stance against doping.

A2. Legitimacy Perceptions

Definition: The legitimacy of anti-doping organizations refers to the extent to which they are seen to be duly constituted and have valid authority to enforce anti-doping regulations. It is generally believed that the stronger an organization's perceived (and actual) legitimacy, the more likely people will comply with that organization's rules and regulations (Tyler, 1990). Tyler's (1990) conceptualization of the influence of justice on the legitimacy of legal authorities provides a framework for understanding athletes' perception of the legitimacy of anti-doping organizations in undertaking drug testing. According to Tyler (1990), an authority's legitimacy is influenced by

three dimensions of justice: (1) distributive justice – the fairness of the outcomes of a system; (2) procedural justice – the fairness of the processes; and (3) interactional justice – the fairness of the interpersonal treatment during implementation of the procedures (Bies & Moag, 1986; Gilliland, 1993). Hence, the legitimacy of anti-doping organizations is based on establishing a fair and just drug testing regime (distributive justice), with clear and transparent processes in collecting, analyzing and storing of samples for testing, fair processes for any subsequent appeals of an anti-doping rule violation in tribunals and the Court of Arbitration for Sport (procedural justice), and courteous treatment of athletes by personnel administering the drug collection procedure (interactional justice). Donovan et al. (2002) theorized that if athletes perceive an anti-doping organization's drug testing regime to be fair and just on these dimensions of justice, then the legitimacy of the anti-doping organization in conducting drug testing is likely to be enhanced, and compliance with anti-doping regulations more likely.

A2.1 Minimum/basic items

Perceptions of legitimacy of the enforcement agency's testing and appeals processes measured on Tyler's (1990) three dimensions of justice.

(i) Distributive justice

Definition: The perceived fairness of the outcomes of the drug testing process.

Items:

- Equitable treatment of all athletes by the enforcement agency,
- Security of the testing procedures, and
- Accuracy of the current drug tests.

Q#. How fair is the (insert name of NADO) in terms of treating all athletes equally?

Very fair 1
Fair 2
Unfair 3
Very unfair 4
Don't know 9

Q#. How secure is the (insert name of NADO)'s drug testing procedures in (country)? That is, in the taking of samples and the care of samples?

Very secure 1
Quite secure 2
Not really secure 3
Not at all secure 4
Don't know 9

Q#. How accurate do you feel the current drug tests are in terms of being able to correctly identify the following substances?

	Very accurate	Quite accurate	A little accurate	Not accurate	Not at all accurate	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Note that an Agency can vary the substances on this list to include new substances or just include those most relevant to their country or the sport being surveyed. Alternatively, the Agency may just ask the general question:

Q#. How accurate do you feel the current drug tests are in terms of being able to correctly identify banned performance enhancing substances?

Very accurate.....1
Quite accurate 2
A little accurate.....3
Not accurate. 4
Not at all accurate 5
Don't know 9

Distribution of responses in a survey of elite Australian athletes:

Table 4.3 shows that the vast majority of these Australian athletes believed that the Australian Sports Drug Agency is fair in treating all athletes equally (89.9%; 'very' fair: 41.0%).

Table 4.3: Perceived fairness of the Australian Sports Drug Agency in treating all athletes equally (N=1,237)

	%
Very fair	41.0
Fair	48.9
Unfair	5.7
Very unfair	1.8
No response	2.6
Total	**100.0**

Table 4.4 shows that there was an almost universal perception that the Australian Sports Drug Agency's drug testing procedures in Australia are secure (95.3%; 'very' secure: 51.7%).

Table 4.4: Perceived security of the Australian Sports Drug Agency's drug testing procedures in Australia (N=1,237)

	%
Very secure	51.7
Quite secure	43.6
Not really secure	1.9
Not at all secure	0.1
No response	2.8
Total	**100.0**

Comment:

These results suggest that the Agency would not need to make extra efforts to counter perceptions of unfairness or insecurity of procedures. Nevertheless, higher proportions of 'Very' fair and secure would be desirable. Furthermore, these need to be monitored to detect any negative changes over time so that prompt action can be taken where a decline in these percentages occurred.

Table 4.5 shows that for each of the six banned performance-enhancing substances, a substantial minority of this sample of athletes 'don't know' whether or not the drug test is accurate in correctly identifying the substance, from 31.2% for anabolic steroids to 47.5% for beta-blockers.

Table 4.5: Perceived accuracy of the current drug tests

	Very accurate %	Quite accurate %	A little accurate %	Not accurate %	Not at all accurate %	Don't know %	No response %
Anabolic steroids	35.3	27.1	3.6	1.1	0.3	31.2	1.4
Human growth hormones (hGH)	20.2	19.5	5.7	2.9	4.7	45.7	1.4
Designer steroids like Tetrahydrogestrinone (THG)	19.3	20.8	7.4	2.3	2.5	46.2	1.4
Erythropoietin (EPO) and other similar substances	19.5	19.2	8.7	3.6	1.9	45.7	1.5
Beta-blockers	25.4	21.0	3.6	0.6	0.2	47.5	1.7
Diuretics	28.4	25.2	4.8	0.9	0.3	39.0	1.4

Comment:

These data would suggest that the Agency should make efforts to increase athletes' perceptions of the scientific accuracy of its testing procedures in its drug education programs.

(ii) Procedural justice

Definition: The perceived fairness of the appeals process.

Items:

- Level of satisfaction in receiving a fair hearing in appealing a positive test.
- Level of satisfaction in receiving a fair hearing prior to decision on imposing sanctions.
- Level of satisfaction in receiving a fair hearing in the Court of Arbitration in Sport.

Q#. How satisfied are you that athletes who appeal a positive test in (insert name of country) will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied.....3
Very dissatisfied.....4
Don't know 9

Q#. How satisfied are you that athletes in your sport who test positive will be given a fair hearing before a decision is made about applying a penalty?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied.....3
Very dissatisfied.....4
Don't know 9

Q#. How satisfied are you that athletes who appeal a positive test before the Court of Arbitration in Sport will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied.....3
Very dissatisfied.....4
Don't know 9

Distribution of responses in an Australian sample of elite athletes:

Table 4.6 shows that the levels of satisfaction of a fair hearing were high for each of the three appeal scenarios: 87.8% to 91.5% of the total sample ('very' satisfied: 22.6% to 25.3%).

Table 4.6: Perceived fairness of the appeals process (N=1,237)

	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very dissatisfied	No response
	%	**%**	**%**	**%**	**%**
Fair hearing in appealing a positive test	22.6	66.9	7.1	1.9	1.6
Fair hearing before a decision is made about applying a penalty	25.3	62.5	8.0	2.4	1.8
Fair hearing in the Court of Arbitration in Sport	24.5	67.0	4.1	1.4	3.0

Comment:

These results suggest that the Agency could engage in extra efforts to increase the percent 'very satisfied' with respect to perceptions of fairness, as well as continue to reinforce these beliefs. Other than for perceived accuracy of testing, it is suggested that where 25% or more of a sample do not believe that the agency is fair and equitable in any of these areas (i.e., are dissatisfied), then the agency should take steps to improve these perceptions.

(iii) Interactional justice

Definition: The interpersonal interactions with personnel administering the drug collection procedure.

Item:

- Among athletes who have been drug tested:

Q#. Did you find the experience of being tested traumatic or upsetting in any way?

No 1
Yes – somewhat 2
Yes – very much 3

Q#. How would you describe the conduct of the testing personnel?

(a) Courteous OR Rude Or Neither
1 ..... 2 3

(b) Helpful OR Unhelpful Or Neither
1 ..... 2 3

(c) Friendly OR Unfriendly Or Neither
1 ..... 2 3

(d) Sensitive OR Insensitive Or Neither
1 ..... 2 3

Distribution of responses in an Australian sample of 'Olympics/World' and 'National' athletes:

Table 4.7 shows that the vast majority of these athletes did not find the experience traumatic or upsetting (81.7%). However a small but substantial proportion of athletes did find the experience traumatic or upsetting: 16.2%. A high proportion of athletes felt that the testing personnel were friendly (86.8%), courteous (84.2%) and helpful (83.8%). The proportion of athletes who felt that the testing personnel were sensitive was substantially lower at 62.2%. Less than 3% of athletes found the testing personnel unfriendly, rude, unhelpful or insensitive.

Table 4.7: Drug testing experiences among athletes who had been drug tested (N=759)

	%
Testing process was traumatic or upsetting:	
Yes – very much	2.4
Yes – somewhat	13.8
No	81.7
No response	2.1
Total	**100.0**
Conduct of the testing personnel:	
Friendly	86.8
Unfriendly	1.6
Neither	9.2
No response	2.4
Total	**100.0**

Table 4.7: Drug testing experiences among athletes who had been drug tested (N=759) (Cont'd)

	%
Courteous	84.2
Rude	1.6
Neither	12.1
No response	2.1
Total	**100.0**
Helpful	83.8
Unhelpful	2.4
Neither	11.5
No response	2.4
Total	**100.0**
Sensitive	62.2
Insensitive	2.6
Neither	32.7
No response	2.5
Total	**100.0**

Comment:

In this case it would be advisable for the Agency to investigate reasons for being upsetting so that action can be taken before this percentage increases. Testers need to be continually praised for being courteous and reminded of why that is important. In general, evidence for all these legitimacy aspects should be included in anti-doping education programs. However we are unaware of any programs that systematically attempt to do so.

A3. Benefit Appraisal: Beliefs about the Benefits of Doping Measures

Definition: The benefit appraisal construct is based on the Health Belief Model (Becker, 1974; Rosenstock, 1977). According to the Health Belief Model, the likelihood of adopting a behavior to prevent a health problem is based on an individual's: (a) perceived susceptibility to that particular health problem; (b) perceived severity of the health problem; (c) perceived benefits of averting the health problem; and (d) the costs or constraints of adopting the behavior. In addition, a trigger is required to initiate action.

Donovan et al. (2002) suggested that the Health Belief Model can be applied in reverse where the behavior is not a threat of a health problem but a 'promise' of a desired level of sport performance. That is, the likelihood of using banned performance-enhancing substances will increase if: (a) athletes believe that they are unable to achieve at their desired level of performance without using a performance-enhancing substance; (b) if achieving at their desired level of performance has considerable rewards; and (c) if they believe that performance-enhancing substances use has little or no undue adverse health effects or expense (i.e., price of the performance-enhancing substance; costs in terms of time and effort in obtaining and using the performance-enhancing substance).

Benefit appraisal is measured in terms of the perceived positive impact of performance-enhancing substances use on sport performance, and the perceived likelihood and desirability of potential positive outcomes of success in sport.

A3.1 Minimum/basic items

(i) Perceived performance-enhancing effects of banned substances and methods

Definition: An athlete's perception of the extent to which the use of various types of performance-enhancing substances would lead to improved performance in their sport.

Item:

Q#. If you were to use the following substances, how likely is it that these substances would improve your performance in your sport?

	Definitely would not	Probably would not	Might or might not	Probably would	Definitely would	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9

As before, this list can be varied to suit the country or sport being surveyed. Similarly an overall question could be asked instead:

Q#. If you were to use a banned performance enhancing substance of your choice, how likely is it that you would improve your performance in your sport?

Definitely would not 1
Probably would not 2
Might or might not 3
Probably would.....4
Definitely would 5
Don't know 9

Distribution of responses in a sample of elite Australian athletes:

Table 4.8 shows that in an Australian sample of elite athletes, 'anabolic steroids' was perceived to be the most beneficial to sport performance ('definitely/probably would': 57.9%), followed by 'human growth hormones (hGH)' (47.7%), 'designer steroids like tetrahydrogestrinone (THG)' (41.4%), and 'erythropoietin (EPO) and other similar substances' (33.1%).

Table 4.8: Perceived impact of performance-enhancing substances on sport performance

	Definitely would not	Probably would	Might or might not	Probably would	Definitely would	Don't know	No response
	%	%	%	%	%	%	%
Anabolic steroids	12.9	6.5	10.1	25.2	32.7	10.2	2.3
Human growth hormones (hGH)	11.5	5.2	10.3	23.8	23.9	22.9	2.5
Designer steroids like Tetrahydrogestrinone (THG)	11.3	4.9	9.8	19.7	21.7	29.7	2.8
Erythropoietin (EPO) and other similar substances	12.7	8.2	10.1	14.8	18.3	32.7	3.2
Beta-blockers	20.9	9.5	11.8	8.2	5.2	40.5	4.0

Comment:

Given that different substances are related to different effects (i.e., strength vs endurance), athletes' response here would vary by their type of sport. Hence the major outcome of interest is to what extent athletes believe that any one or more of these substances will improve their performance. These levels are a basic measure of susceptibility, in that if athletes believe they 'definitely' would improve their performance, then they would be more likely, all other things being equal, to be tempted to dope. Conversely, where anti-doping programs can lead athletes to doubt the efficacy of these substances, they will be less likely to use them.

By including various substances in this item, the Agency can track what drugs would be more appealing to athletes and hence take specific education and detection actions with respect to those drugs. Reactions to new drugs can also be monitored in this item.

(ii) Likelihood and desirability of potential positive outcomes for performing well in sport

Definition: An athlete's perception of the likelihood and desirability of potential positive outcomes of success in their sport (e.g., sponsorship deals, celebrity status, financial security).

Items:

Desirability of potential positive outcomes of success in their sport:

Q#. How much would you personally like these outcomes for performing well in your sport?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

Q#. To what extent does your sport offer athletes these outcomes if they perform well?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

The items in the list can be adapted to a particular country or additional items added.

Distribution of responses in a sample of elite Australian athletes:

Table 4.9 shows that for this sample of elite Australian athletes, the main perceived outcome for performing well in their own sport was 'personal best achievements' ('a lot': 67.3%), followed by 'opportunities for remaining in the sport as coach, trainer or administrator' (39.7%). Given the wide variety of sports represented, it was not surprising that the proportions were substantially lower for outcomes related to celebrity status (national: 13.6%; international celebrity: 9.9%) and financial wealth/security (sponsorships: 14.4%; financial security: 13.3%).

Table 4.9: Perceived positive outcomes for performing well in sports (N=1,237)

	A lot	A little	Not at all	No response
	%	**%**	**%**	**%**
Personal best achievements	67.3	25.8	4.8	2.1
Opportunities for remaining in the sport as coach, trainer or administrator	39.7	49.2	8.6	2.5
Lucrative sponsorship deals	14.4	35.9	47.7	2.0
National celebrity status	13.6	43.1	41.2	2.1
Future financial security	13.3	22.2	62.7	1.9
International celebrity status	9.9	30.7	57.3	2.0

With respect to the desirability of these outcomes, Table 4.10 shows that 'personal best achievements' was the most desired outcome ('a lot': 87.1%), followed by 'future financial security' (77.8%) and 'lucrative sponsorship deals' (69.7%). Approximately half of the total sample desired 'opportunities for remaining in the sport as coach, trainer or administrator' (51.8%), with the desirability of national and international celebrity status at 39.2% and 33.8% respectively.

Table 4.10: Desirability of the positive outcomes for performing well in sports (N=1,237)

	A lot	A little	Not at all	No response
	%	**%**	**%**	**%**
Personal best achievements	87.1	9.0	1.5	2.4
Opportunities for remaining in the sport as coach, trainer or administrator	51.8	38.3	7.4	2.5
Lucrative sponsorship deals	69.7	25.8	2.6	1.9
National celebrity status	39.2	48.7	10.0	2.0
Future financial security	77.8	17.8	2.3	2.1
International celebrity status	33.8	42.8	21.1	2.3

Comment:

While factors such as international celebrity status and lucrative sponsorship deals vary by type of sport, it is important to monitor the extent to which these are seen to be attainable, and hence could be used to entice or self-motivate banned substance use. Overall, these (and other data) indicate that athletes can be motivated to use performance enhancing substances – legal and illegal – to perform at their personal best (an internal motivation), and to achieve 'fame and fortune' (external motivations). The extent to which athletes desire these 'a lot', contributes to their susceptibility to doping.

Conversely, anti-doping efforts can emphasize the loss of these benefits if an athlete is caught doping – and particularly with respect to remaining in the sport after their athletic career is over and the potential for having to pay back money received in sponsorship details (as is likely in the Lance Armstrong case).

A4. Threat or Deterrence Appraisal: Beliefs about the Negative Consequences of Doping

Research indicates that two types of threats can be used to deter athletes from doping: (1) a high likelihood of being caught and subsequent severe negative consequences (enforcement); and (2) the ill-health effects of performance-enhancing substances use.

A4.1 Minimum/basic items

(i) Appraisal of threats relating to enforcement

Items:

- Perceived likelihood of being tested in and out of competition.
- Perceived likelihood of evading detection if using doping in and out of competition.
- Perceived severity of the sanctions for testing positive.

Q#. How likely is it that athletes at your level would be drug tested at least once a year?

(a) In competition at least once a year:

Very likely 1
Quite likely 2
A little likely 3
Not likely 4
Not at all likely 5
Don't know 9

(b) Out of competition at least once a year:

Very likely 1
Quite likely 2
A little likely 3
Not likely 4
Not at all likely 5
Don't know 9

Q#. It has been said that athletes who take banned substances can use various methods to avoid testing positive.

(a) From what you know or have heard, if you were to take banned performance-enhancing substances while competing, how likely do you think that you could get away with it if you really tried to?

Very likely 1
Quite likely.....2
A little likely 3
Not likely.....4
Not at all likely 5
Don't know 9

(b) From what you know or have heard, if you were to take banned performance-enhancing substances out of competition, how likely do you think that you could get away with it if you really tried to?

Very likely 1
Quite likely.....2
A little likely 3
Not likely.....4
Not at all likely 5
Don't know 9

Q#. From what you know or have heard, are the penalties for a positive drug test in your sport severe or lenient?

Very severe 1
Fairly severe.....2
Fairly lenient 3
Very lenient 4
Don't know 9

Distribution of responses in a sample of elite Australian athletes:

In a sample of elite Australian athletes, Table 4.11 shows that the vast majority considered it likely that athletes at their level would be drug tested both in and out of competition at least once a year, with the perceived likelihood of being tested in competition higher than out of competition: 90.4% vs 78.2% respectively.

With respect to evading detection if using a banned substance, Table 4.12 shows that substantial proportions considered that this could be likely, both in-competition (38.4%) and out-of-competition (64.0%).

With respect to perceived severity of the sanctions for testing positive, Table 4.13 shows that the vast majority of these athletes felt that the penalties for a positive drug test in their sport were 'very' or 'fairly' severe (79.9%).

Table 4.11: Perceived likelihood of being tested in and out of competition at least once a year

	In competition N=1,237 %	Out of competition N=1,237 %
Very likely	45.0	35.3
Quite likely	28.9	23.2
A little likely	16.5	19.7
Total likely	***90.4***	***78.2***
Not likely	7.4	14.7
Not at all likely	1.3	6.1
No response	0.9	0.9
Total	**100.0**	**100.0**

Table 4.12: Perceived likelihood of evading detection if using performance-enhancing substances in and out of competition

	In competition N=1,237 %	Out of competition N=1,237 %
Very likely	2.8	7.8
Quite likely	12.9	24.3
A little likely	22.7	31.9
Total likely	***38.4***	***64.0***
Not likely	37.3	25.9
Not at all likely	23.2	8.7
No response	1.1	1.5
Total	**100.0**	**100.0**

Table 4.13: Perceived severity of the sanctions for testing positive to a performance-enhancing substance (N=1,237)

	%
Very severe	23.4
Fairly severe	56.5
Total severe	***79.9***
Fairly lenient	14.2
Very lenient	1.9
No response	4.0
Total	**100.0**

Comment:

For deterrence to be maximally effective, it would be desirable for the perceived likelihood of being tested to attract a greater number of 'very' likely responses – both for in- and out- of competition. However, these totals of 90% and near 80% for in and out of competition respectively appear acceptable, but require monitoring to ensure they do not go below these levels for elite athletes.

Somewhat arbitrarily, but consistent with levels susceptible to a 'triggering event', we would set maximum targets of 25% and 50% in and out of competition respectively believing they could evade detection, provided the majority of these were in 'little likely" category. Hence the levels in Table 4.12 would be of concern and the reasons behind these beliefs would warrant investigation. At the very least, these data indicate that steps should be taken to increase the perceived – and actual – likelihood of being tested, and particularly out of competition.

Similarly, for optimal deterrence it would be preferable for penalties to be seen as 'severe' by at least 90% and 'very severe' by the majority of athletes. At the same time, it would be necessary to ensure that this perceived severity was seen by the athletes to be justified. Deterrence generally requires keeping these issues salient for athletes. Hence they should not only be covered in anti-doping education programs, but intermittently in media announcements, sporting groups' newsletters, social media platforms, and other avenues.

(ii) Appraisal of threats relating to ill-health effects

Threats to health are assessed for both short term and long term use, as athletes who believe there are few short-term negative effects may be more susceptible to doping for specific events or short term benefits (such as recovery from injury).

Items:

Q#. How much harm to your health do you think would be caused by using each of the following substances for a short time say up to two months?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2. Beta-blockers	1	2	3	4	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	9
5. Human growth hormones (hGH)	1	2	3	4	9
6. Diuretics	1	2	3	4	9

Q#. How much harm to your health do you think would be caused by using each of the following substances <u>regularly</u>?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2. Beta-blockers	1	2	3	4	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	9
5. Human growth hormones (hGH)	1	2	3	4	9
6. Diuretics	1	2	3	4	9

As elsewhere, the actual list of substances can vary according to which are most relevant to a particular sport or in a particular country at a particular point in time.

Distribution of responses in a sample of elite Australian athletes:

As an indicator of short-term use, a sample of elite Australian athletes was asked for their perceived health risk for use 'once or twice ever'. These results are shown in Table 4.14. Perceived health consequences for regular use are shown in Table 4.15. Not unexpectedly, far greater proportions perceive harm from 'regular' use relative to 'once or twice'.

Table 4.14: Perceived health risk of 'once or twice ever' use of six banned performance-enhancing substances (N=1,237)

	A lot of harm %	Some harm %	A little harm %	No harm %	Don't know %	No response %
Anabolic steroids	39.0	29.4	13.5	4.9	11.5	1.7
Human growth hormones (hGH)	36.1	24.1	10.4	4.9	23.2	1.4
Designer steroids like Tetrahydrogestrinone (THG)	34.9	22.2	9.7	3.0	28.5	1.6
Erythropoietin (EPO) and other similar substances	31.9	21.3	10.3	4.6	29.9	1.9
Beta-blockers	22.6	21.2	10.4	5.9	37.6	2.3
Diuretics	13.8	23.1	20.7	18.7	22.2	1.5

Table 4.15: Perceived health risk of regular use of six banned performance-enhancing substances (N=1,237)

	A lot of harm %	Some harm %	A little harm %	No harm %	Don't know %	No response %
Anabolic steroids	83.2	5.9	0.7	0.2	8.9	1.1
Human growth hormones (hGH)	70.7	7.6	1.9	0.6	17.9	1.4
Designer steroids like Tetrahydrogestrinone (THG)	70.2	5.2	0.6	0.1	22.6	1.5
Erythropoietin (EPO) and other similar substances	65.7	6.6	1.3	0.4	24.4	1.5
Beta-blockers	55.7	9.0	1.2	0.7	31.7	1.7
Diuretics	50.3	19.5	7.8	1.4	19.7	1.4

Comment:

These data indicate that these harmful effects need to be reinforced, and that drug education programs need to include information on the substances where there is a high percentage of 'don't know' responses. Most countries have resources around the negative health effects, and particularly for steroid use. As in health campaigns in other areas (i.e., alcohol and tobacco), graphic visuals of negative health consequences can be more effective than simply informational text.

A5. Personality/Psychological Factors

Definition: Personality is a complex aspect of human individuality, and therefore requires the consideration of multiple components that provide insight into the whole person. As first described, Donovan et al. (2002) noted optimism, type of motivation (intrinsic versus extrinsic), self-efficacy, risk-taking propensity, self-presentational concerns, and impulsivity as key personality variables that may be related to doping susceptibility and behavior. In most studies researchers have examined personality variables in isolation or alongside 1 or 2 other attributes only. Only one study to date has compared several personality variables together in the prediction of doping susceptibility (Donovan, Jalleh & Gucciardi, 2009). Our recommendations in this section are primarily guided by this research, along with the findings of a recent statistical synthesis of the doping literature (Ntoumanis, Ng, Barkoukis & Backhouse, 2014). The following four variables have received the most widespread support for their importance for doping susceptibility and behavior.

A5.1 Minimum/basic item

(i) Self-efficacy to refrain from doping

Definition: Athletes' belief in their ability to avoid using banned performance enhancing drugs or methods, or resist temptations to engage in doping (Lucidi et al., 2008). This construct represents an interaction between the person and situation, whereby individuals who perceive they have the required skills and knowledge to not engage in doping are less susceptible to do so than athletes who do not believe so. This construct is particularly important for situations in which athletes might be offered a banned performance enhancing substance or

method, where the pressure from others is perceived to be or actually is high, or where doping substances are readily available and their use seen to be widespread. This construct may also be termed or is very similar to 'Perceived Behavioral Control'.

Items:

The following two items serve as a basic measure of self-efficacy.

Q#. How confident are you in being able to resist pressure from your team mates to use a banned substance?

Very confident could resist 1
Quite confident could resist 2
Not very confident could resist 3
Not confident at all could resist 4
Wouldn't want to resist 5

Q#. Please rate the extent to which you currently feel that whether or not you take a banned performance enhancing substance in the future is under your personal control?

Completely out of my control						Completely under my control
1	2	3	4	5	6	7

Comment:

Athletes who score 4 or less on these 7-point scales (or 3 or less on the 5-point scale) can be considered vulnerable to doping. Hence, where 30% or more of athletes score 4 or less on the 7-point scales, then the Agency should take action to include 'refusal' role playing exercises in anti-doping education programs. However, while some Agencies may have such components in their programs, these course materials do not appear to be readily available. Nevertheless, self-efficacy can also be built by strengthening a moral stance against doping, along with how to resist the temptation to use moral disengagement mechanisms.

A5.2 Optional measures

10 items scale (Lucidi et al., 2008):

The following ten items can be used where space allows.

Q#. Here are several scenarios that you may have encountered, or may come across during your career in sport. Please rate the extent to which you currently feel capable in being able to avoid or overcome these situations using the scale below.

	Not at all capable						Completely capable
1. To avoid using banned PEDMs before a competition even when you know you can get away with it	1	2	3	4	5	6	7

	Not at all capable						Completely capable
2. To avoid using banned PEDMs in sport even when you feel down physically	1	2	3	4	5	6	7
3. To resist the temptation to use banned PEDMs to improve your performance	1	2	3	4	5	6	7
4. To resist the temptation to use banned PEDMs to have a body that others would admire, even when no-one would ever know	1	2	3	4	5	6	7
5. To resist the temptation to use banned PEDMs to have a great appearance	1	2	3	4	5	6	7
6. To avoid using banned PEDMs to have your body look as you would like	1	2	3	4	5	6	7
7. To avoid using banned PEDMs to get results more quickly, even when no-one would ever know	1	2	3	4	5	6	7
8. To not use banned PEDMs, despite the pressure to do so from others	1	2	3	4	5	6	7
9. To avoid using banned PEDMs to improve your performance in the sport you practice, even when you know that it will not have side-effects	1	2	3	4	5	6	7
10. To avoid using banned PEDMs, even when most of those who practice your sport use them	1	2	3	4	5	6	7

Comment:

These ten items reflect situations known to tempt athletes to use doping. Hence the Agency can gather information as to which situations are most prevalent amongst their athletes, and then focus on building resistance skills for those situations. Individual athletes can also be given an overall score (by adding their scores on each item and dividing by 10). As before, where 30% or more of athletes score 4 or less, then action should be taken to include self-efficacy skills in education programs.

(ii) Sport Motivation

Definition: Motivation refers to the reason(s) why people behave the way they do. There are many motivation models in the psychological literature. With respect to motivations for engaging in sport, the items below measure the following six types of motivation: intrinsic motivation (IM); integrated regulation (Integ); identified regulation (Ident); introjected regulation (Intro); external regulation (Ext); and amotivation (Amo) (Deci & Ryan, 2000).

Amotivation (i.e., relevant to behaviors that are non-intentional or lack energy) and intrinsic motivation (i.e., where the behaviors are inherently enjoyable or interesting) are the most important for understanding doping susceptibility (Donovan, Jalleh & Gucciardi, 2009; Ntoumanis et al., 2014). Amotivation is positively related whereas intrinsic motivation is negatively related to doping susceptibility. Hence where space and time are limited, only items measuring these two types of motivations need be included (i.e., items designated IM and Amo in the list below).

Items:

Q#. Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you are participating in the <u>current competitive season</u>; if you are not currently participating in a competitive season, please consider your reasons for participation during your most recent competitive season.

I participate in my sport because ….

		Not at all true				Somewhat true		Very true
IM1:	because I enjoy it	1	2	3	4	5	6	7
Integ1:	because it's a part of who I am	1	2	3	4	5	6	7
Integ2:	because it's an opportunity to just be who I am	1	2	3	4	5	6	7
Intro1:	because I would feel ashamed if I quit	1	2	3	4	5	6	7
Amo1:	but the reasons why are not clear to me	1	2	3	4	5	6	7
Intro2:	because I would feel like a failure if I quit	1	2	3	4	5	6	7
Amo2:	but I wonder what's the point	1	2	3	4	5	6	7
Integ3:	because what I do in sport is an expression of who I am	1	2	3	4	5	6	7
Ident1:	because the benefits of sport are important to me	1	2	3	4	5	6	7
IM2:	because I like it	1	2	3	4	5	6	7
Intro3:	because I feel obligated to continue	1	2	3	4	5	6	7
Amo3:	but I question why I continue	1	2	3	4	5	6	7
Ext1:	because people push me to play	1	2	3	4	5	6	7
Ext2:	because if I don't other people will not be pleased with me	1	2	3	4	5	6	7
Ident2:	because it teaches me self-discipline	1	2	3	4	5	6	7
Intro4:	because I would feel guilty if I quit	1	2	3	4	5	6	7
IM3:	because I find it pleasurable	1	2	3	4	5	6	7

		Not at all true				Somewhat true			Very true
Amo4:	but I question why I am putting myself through this	1	2	3	4	5	6	7	
Ident3:	because it is a good way to learn things which could be useful to me in my life	1	2	3	4	5	6	7	
Ext3:	in order to satisfy people who want me to play	1	2	3	4	5	6	7	
Integ4:	because it allows me to live in a way that is true to my values	1	2	3	4	5	6	7	
Ident4:	because I value the benefits of my sport	1	2	3	4	5	6	7	
Ext4:	because I feel pressure from other people to play	1	2	3	4	5	6	7	
IM4:	because it's fun	1	2	3	4	5	6	7	

IM = intrinsic motivation;
Integ = integrated regulation;
Ident = identified regulation;
Intro = introjected regulation;
Ext = external regulation;
Amo = amotivation.

Comment:

It is beyond the scope of this report to discuss all of these motivations in detail. This scale is optional and for those wishing to undertake more comprehensive research in this area. Nevertheless, again the measure can be used to simply look at the percentages stating each item (or group of items for each motivation type) as a reason for participating in sport. This is useful background information for understanding athletes' motivations. Furthermore, as above, where the percentage of athletes who express amotivation reasons (i.e., score 4 or more average on the amotivation items) exceeds 30%, then these athletes represent a substantial group vulnerable to doping. Efforts could be made in anti-doping programs to identify such athletes and use motivational interviewing techniques to elicit more desirable motives for engaging in sport. However we are unaware of any existing education programs that do this.

(iii) Self-presentational concerns

Definition: An awareness of and concerns associated with how people might have unfavorable or undesirable perceptions of oneself (Wilson & Eklund, 1998). There are four broad areas of concern: (i) concerns with one's physical appearance (PA); (ii) concerns about appearing athletically untalented (AAU); (iii) concerns about appearing fatigued or lacking energy (FLE); and (iv) appearing to have mental composure inadequacies (MCI) (McGowan, Prapavessis & Wesch, 2008).

Research indicates that concerns about physical appearance (PA) and appearing athletically untalented (AAU) are the most important factors for doping susceptibility and behavior (Donovan, Jalleh & Gucciardi, 2009; Ntoumanis et al., 2014). Hence, where time and space are limited, only items related to these two concerns can be included.

Items:

Q#. Athletes have different perceptions as to how others may perceive them. The following statements capture these differences in self-perceptions. For each of the following statements, circle the number that best represents the extent to which the item corresponds to you with respect to the main sport you currently compete in.

During competition I worry that other people may perceive me as ….

		Never				Always
PA1:	Appearing flabby	1	2	3	4	5
PA2:	Appearing physically untoned	1	2	3	4	5
PA3:	Appearing ugly or unpleasant in my uniform	1	2	3	4	5
PA4:	Appearing physically unattractive	1	2	3	4	5
PA5:	Appearing too small or too big in my uniform	1	2	3	4	5
AAU1:	Appearing untalented	1	2	3	4	5
AAU2:	Appearing not to perform or execute perfectly	1	2	3	4	5
AAU3:	Appearing athletically incompetent	1	2	3	4	5
AAU4:	Appearing underskilled	1	2	3	4	5
AAU5:	Appearing to lack ability	1	2	3	4	5
AAU6:	Appearing unqualified	1	2	3	4	5
MCI1:	Appearing to lose composure	1	2	3	4	5
MCI2:	Appearing unfocused	1	2	3	4	5
MCI3:	Appearing nervous under pressure	1	2	3	4	5
MCI4:	Appearing to lack necessary focus	1	2	3	4	5
MCI5:	Appearing underactivated	1	2	3	4	5
MCI6:	Appearing distressed	1	2	3	4	5
FLE1:	Appearing exhausted	1	2	3	4	5
FLE2:	Appearing fatigued	1	2	3	4	5
FLE3:	Appearing tired	1	2	3	4	5
FLE4:	Appearing to lack energy	1	2	3	4	5

AAU = appearing athletically untalented;
PA = physical appearance;
FLE = fatigue/lacking energy;
MCI = mental composure inadequacies

Comment:

Again the percentages of athletes rating these individual items 4 or 5 can be used to provide information about the sample of athletes. Scores on each of the four factors can be obtained by adding ratings for each and dividing

by the number of items for each factor. As above, where 30% or more of athletes score 4 or more on the physical appearance and athletically untalented factors, then the Agency could consider action. An overall recommendation about psychological interventions will be provided at the end of this section.

(iv) Goal orientations

Definition: Individual differences in the ways by which people define success or achievement (Nicholls, 1989). Within the context of achievement goal theory, there are two broad types of goals: task-oriented or learning goals (Task) are self-referenced and therefore pertain to personal improvement and mastery of the behavior, task, or skill, whereas ego-oriented or performance goals (Ego) are normatively-referenced and therefore based on comparisons with the performance of others (e.g., peers, competitors). Research indicates that task-oriented goals are related to lower susceptibility to doping (Ntoumanis et al., 2014).

Items:

Q#. Success in sport can mean different things to different people. The statements in this section of the survey capture a variety of ways in which athletes define their sporting success. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

In sport, I feel most successful when I ….

		Strongly disagree				Strongly agree
Task1:	I reach personal goals	1	2	3	4	5
Task2:	I show clear personal improvement	1	2	3	4	5
Task3:	I perform to the best of my ability	1	2	3	4	5
Task4:	I overcome difficulties	1	2	3	4	5
Task5:	I reach a goal	1	2	3	4	5
Task6:	I work hard	1	2	3	4	5
Ego1:	I show other people I am the best	1	2	3	4	5
Ego2:	I am the best	1	2	3	4	5
Ego3:	I am clearly superior	1	2	3	4	5
Ego4:	I outperform my opponents	1	2	3	4	5
Ego5:	I beat other people	1	2	3	4	5
Ego6:	I win	1	2	3	4	5

Comment:

In this case, we are not interested in percentages responding to individual items, but the total scores for each of the Task and Ego factors (obtained by adding ratings for each and dividing by six). The following personality constructs may be of interest to agencies who wish to undertake more intensive research or develop a more comprehensive psychological profile of doping susceptibility.

(v) Athletic identity

Definition: The extent to which one commits to the goals, values, and beliefs associated with the athlete role and finds them personally expressive of who they are (Brewer, Van Raalte & Linder, 1993). Athletic identity contains two dimensions, one that is concerned with internal private aspects (e.g., attitudes, values) (private athletic identity; Pri) and another on how others may see or judge a person (public athletic identity; Pub) (Burke, 1991). The public dimension is most related to doping susceptibility (Donovan, Jalleh & Gucciardi, 2009), because individuals who are heavily invested in portraying themselves as athletes to others could be expected to see doping as a way to maintain their image of a successful performer.

Items:

Q#. The following statements relate to your personal self-perceptions about being an athlete and playing your chosen sport. Please rate the extent to which you agree or disagree with each statement below based on how you would currently describe yourself.

		Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
Pub1:	My primary reason for competing in my sport is receiving awards and recognition	1	2	3	4	5
Pri1:	Being an athlete is an important part of who I am	1	2	3	4	5
Pub2:	I often fear people will not like me as much if I do not compete well	1	2	3	4	5
Pri2:	I obtain personal satisfaction from participating in athletics	1	2	3	4	5
Pub3:	My popularity with others is related to my athletic ability	1	2	3	4	5
Pri3:	I would feel a great sense of loss if I suddenly were unable to participate in sport	1	2	3	4	5
Pub4:	I only participate in sports because I am good at them	1	2	3	4	5
Pri4:	It is very important for me to succeed at my sport	1	2	3	4	5
Pub5:	I fear not receiving the recognition and attention I get from being an athlete when I retire	1	2	3	4	5
Pri5:	Sport helps me express my emotions and feelings	1	2	3	4	5

Pub = public athletic identity;
Pri = private athletic identity

Comment:

While the percentages responding to individual items may be of some interest, we are primarily interested in the total scores for each of the Public and Private factors (obtained by adding ratings for each and dividing by five).

(vi) Sportspersonship

Definition: The extent to which an individual endorses or rejects behaviors that carry moral connotations because they relate to issues of respect, fairness, and the rules of their sport (Vallerand et al., 1997). Individuals who endorse behaviors consistent with the spirit of the game are less likely to report positive attitudes towards or intentions to engage in doping (Ntoumanis et al., 2014). The scale presented here (Vallerand et al., 1997) contains items measuring five areas of sportsmanship: respect for social conventions (SC); respect for the rules and the officials (RO); respect for one's full commitment toward sport participation (Com); respect and concern for one's opponent (Opp); and a negative approach toward the practice of sport (Neg).

Items:

Q#. For each of the following statements, circle the number that best represents the extent to which the item corresponds to you with respect to the main sport you currently compete in.

		Doesn't correspond to me at all	Corresponds to me a little	Corresponds to me partly	Corresponds to me a lot	Corresponds to me exactly
SC1:	When I lose, I congratulate the opponent whoever he or she is	1	2	3	4	5
RO1:	I obey the referee	1	2	3	4	5
Com1:	In competition, I go all out even if I'm almost sure to lose	1	2	3	4	5
Opp1:	I help the opponent get up after a fall	1	2	3	4	5
Neg1:	I compete for personal honors, trophies, and medals	1	2	3	4	5
SC2:	After a defeat, I shake hands with the opponents' coach	1	2	3	4	5
RO2:	I respect the rules	1	2	3	4	5
Com2:	I don't give up even after making many mistakes	1	2	3	4	5
Opp2:	If I can, I ask the referee to allow the opponent who has been unjustly disqualified to keep on playing	1	2	3	4	5
Neg2:	I criticize what the coach makes me do	1	2	3	4	5
SC3:	After a competition, I congratulate the opponent for his or her good performance	1	2	3	4	5
RO3:	I really obey all rules of my sport	1	2	3	4	5
Com3:	I think about ways to improve my weaknesses	1	2	3	4	5
Opp3:	When an opponent gets hurt, I ask the referee to stop the game so that he or she can get help	1	2	3	4	5

		Doesn't correspond to me at all	Corresponds to me a little	Corresponds to me partly	Corresponds to me a lot	Corresponds to me exactly
Neg3:	After a competition, I use excuses for a bad performance	1	2	3	4	5
SC4:	After a win, I acknowledge the opponent's good work	1	2	3	4	5
RO4:	I respect the referee even when he or she is not good	1	2	3	4	5
Com4:	It is important to me to be present at all practices	1	2	3	4	5
Opp4:	If I see that the opponent is unjustly penalized , I try to rectify the situation	1	2	3	4	5
Neg4:	When my coach points out my mistakes after a competition, I refuse to admit that I made those mistakes	1	2	3	4	5
SC5:	Win or lose, I shake hands with the opponent after the game	1	2	3	4	5
RO5:	I respect an official's decision even if he or she is not the referee	1	2	3	4	5
Com4:	During practices, I go all out	1	2	3	4	5
Opp5:	If by misfortune an opponent forgets his or her equipment, I lend him my spare	1	2	3	4	5
Neg5:	If I make a mistake during a critical time of the match, I get angry	1	2	3	4	5

SC = respect for social conventions;
RO = respect for the rules and the officials;
Com = respect for one's full commitment toward sport participation;
Opp = respect and concern for the opponent;
Neg = negative approach toward the practice of sport

Comment:

As for goal orientations, the percentages responding to individual items may be of some interest. However we are primarily interested in the total scores for each of the five factors (obtained by adding the ratings for each and dividing by five).

(vii) Perfectionism

Definition: A personality trait that includes the tendency to set and strive for exceptionally high standards and being overly critical of oneself (Stoeber, 2011). Athletes who report high levels of performance standards accompanied by high levels of concerns over their mistakes are more susceptible to doping because they may see doping as a way of meeting their excessive performance indicators. The scale below (Dunn et al., 2006) includes four sub-scales: personal standards (PS); concerns over mistakes (COM); perceived coach pressure (PCP); and perceived parent pressure (PPP).

Items:

Q#. A number of statements describing thoughts that players might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

		Strongly disagree			Neutral			Strongly agree
PS1:	If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player	1	2	3	4	5	6	7
PS2:	I hate being less than the best at things in my sport	1	2	3	4	5	6	7
PS3:	It is important to me that I be thoroughly competent in everything I do in my sport	1	2	3	4	5	6	7
PS4:	I think I expect higher performance and greater results in my daily sport-training than most players	1	2	3	4	5	6	7
PS5:	I feel that other players generally accept lower standards for themselves in sport than I do	1	2	3	4	5	6	7
PS6:	I have extremely high goals for myself in my sport	1	2	3	4	5	6	7
PS7:	I set higher achievement goals than most athletes who play my sport	1	2	3	4	5	6	7
COM1:	If I fail in competition, I feel like a failure as a person	1	2	3	4	5	6	7
COM2:	The fewer mistakes I make in competition, the more people will like me	1	2	3	4	5	6	7
COM3:	I should be upset if I make a mistake in competition	1	2	3	4	5	6	7
COM4:	If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree	1	2	3	4	5	6	7
COM5:	If I do not do well all the time in competition, I feel that people will not respect me as an athlete	1	2	3	4	5	6	7
COM6:	People will probably think less of me if I make mistakes in competition	1	2	3	4	5	6	7

		Strongly disagree			Neutral			Strongly agree
COM7:	If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance	1	2	3	4	5	6	7
COM8:	Even if I fail slightly in competition, for me, it is as bad as being a complete failure	1	2	3	4	5	6	7
PCP1:	I feel like my coach criticizes me for doing things less than perfectly in competition	1	2	3	4	5	6	7
PCP2:	Only outstanding performance in competition is good enough for my coach	1	2	3	4	5	6	7
PCP3:	I feel like I can never quite live up to my coach's standards	1	2	3	4	5	6	7
PCP4:	My coach sets very high standards for me in competition	1	2	3	4	5	6	7
PCP5:	My coach expects excellence from me at all times: both in training and competition	1	2	3	4	5	6	7
PCP6:	I feel like my coach never tries to fully understand the mistakes I sometimes make	1	2	3	4	5	6	7
PPP1:	My parents set very high standards for me in my sport	1	2	3	4	5	6	7
PPP2:	In competition, I never feel like I can quite meet my parents' expectations	1	2	3	4	5	6	7
PPP3:	Only outstanding performance during competition is good enough in my family	1	2	3	4	5	6	7
PPP4:	My parents have always had higher expectations for my future in sport than I have	1	2	3	4	5	6	7
PPP5:	I feel like I am criticized by my parents for doing things less than perfectly in competition	1	2	3	4	5	6	7
PPP6:	In competition, I never feel like I can quite live up to my parents' standards	1	2	3	4	5	6	7
PPP7:	My parents expect excellence from me in my sport	1	2	3	4	5	6	7
PPP8:	I feel like my parents never try to fully understand the mistakes I make in competition	1	2	3	4	5	6	7

		Strongly disagree			Neutral			Strongly agree
PPP9:	My parents want me to be better than all other players who play my sport	1	2	3	4	5	6	7

PS = personal standards;
COM = concerns over mistakes;
PCP = perceived coach pressure;
PPP = perceived parent pressure

Comment:

In this case, we are not interested in percentages responding to individual items, but the total scores for each of the four factors (obtained by adding ratings for each and dividing by the number of items for each factor).

(viii) Fear of failure

Definition: The extent to which one fears situations where there is a potential for failure and subsequent emotions such as shame and embarrassment (Conroy, Willow & Metzler, 2002). Athletes with a high fear of failing may be more likely to engage in doping to reduce the possibility of failure.

Items:

Q#. Failing is a natural part of athletic pursuits. The following statements capture the different ways in which athletes might respond to or interpret failure. Please rate the extent to which you believe each of the following statements based on how you would currently describe yourself.

	Do not believe at all				Believe 100% of the time
1. When I am failing, I am afraid that I might not have enough talent	1	2	3	4	5
2. When I am failing, it upsets my "plan" for the future	1	2	3	4	5
3. When I am not succeeding, people are less interested in me	1	2	3	4	5
4. When I am failing, important others are disappointed	1	2	3	4	5
5. When I am failing, I worry about what others think about me	1	2	3	4	5

Comment:

In this case, we are not interested in percentages responding to individual items, but the individual's total score (divided by five). Also in this case, where 30% or more of a sample score 4 or more, this suggests that the Agency could do something to deal with these negative thoughts.

Overall comment re psychological/personality factors:

Dealing with these psychological/personality factors requires a psychological approach that helps athletes deal with things like unrealistic expectations, over concern about the approval of others, negative self-talk about

failure and exaggerated consequences of such, and so on. In serious or extreme cases, sports (and general) psychologists undertake counselling, using cognitive behavior therapy (CBT) principles. However, apart from a program that was developed by the authors in conjunction with athletes and sports psychologists, we are not aware of any programs reported in the literature or available from recognized sources. Our program is currently being tested by the authors and international colleagues to assess whether reducing the above sorts of concerns is related to lowering of doping susceptibility. If a NADO wishes to adapt and trial this program, they can contact Dr Jalleh (g.jalleh@curtin.edu.au).

A6. Beliefs about Reference Groups' Endorsement of Doping Methods/Substances

Definition: These subjective norms relate to peoples' perceptions of various others' attitudes towards particular behaviors. Within the context of the Sport Drug Control Model, subjective norms reflect an athlete's beliefs about important others' opinions about them doping. Basically, these types of norms enable people to determine what types of behaviors are or are not acceptable in society or their social context (in this case, sport). If individuals perceive that a behavior is disapproved by people who are important to them they will be less likely to behave in that manner because it could potentially result in the disapproval of these people.

A6.1 Minimum/basic items

Items:

Q#. If you decided to use a banned performance enhancing substance, to what extent do you think each of the following people would approve or disapprove, or would not care either way if you did that?

	Would definitely approve	Would probably approve	Wouldn't care either wait	Probably disapprove	Probably disapprove
1. Your coach	1	2	3	4	5
2. Parents	1	2	3	4	5
3. Team mates/training partners	1	2	3	4	5
4. Team doctor	1	2	3	4	5
5. Close friends	1	2	3	4	5
6. Trainer	1	2	3	4	5

Comment:

The desirable responses are where substantial majorities consider that each of these persons or groups would 'disapprove' of them doping. These data can be used to identify which of these groups may require attention themselves. For example, if the results show that 40% of athletes believe their parents would approve of doping, then anti-doping material should be disseminated to parents. On the other hand if even 10%-15% of coaches are believed to approve of their doping, then this could warrant immediate increased deterrence efforts targeting coaches.

Overall, the responses here will reflect the extent to which the athlete's sporting context is generally accepting of or disapproving of doping. Such information informs the Agency as to whether and to what extent a public campaign against doping needs to be initiated.

A6.2 Optional measures

Item:

Q#. If you were considering using a banned performance enhancing substance, how much would you take into account these people's opinions on whether you should or should not do so?

	Would definitely take into account	Would probably take into account	Wouldn't care either way	Probably not take into account	Probably not take into account
1. Your coach	1	2	3	4	5
2. Parents	1	2	3	4	5
3. Team mates/training partners	1	2	3	4	5
4. Team doctor	1	2	3	4	5
5. Close friends	1	2	3	4	5
6. Trainer	1	2	3	4	5

Comment:

While the proportions perceiving that the various persons or groups would approve or disapprove of them doping, those most of interest and possible concern – are where the person or group would *approve* and the athlete would *definitely* take their opinion into account.

A7. Beliefs about the Availability of, and Relevant Authorities' Control Over Trafficking of Doping Methods/Substances

A7.1 Minimum/basic items

(i) Perceived availability of performance-enhancing substances

Item:

Q#. How easy or difficult would it be for you to get each of the following types of substances if you wanted to?

	Probably impossible	Very hard	Fairly hard	Fairly easy	Very easy	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Distribution of responses for an elite Australian sample:

Table 4.16 shows the distribution of responses for an Australian elite athlete survey. These data show that approximately half the sample 'don't know' the availability of these substances, and that diuretics (33.3%) and anabolic steroids (13.8%) are easiest to obtain.

Table 4.16: Perceived availability of six performance-enhancing substances

	Probably impossible	Very hard	Fairly hard	Fairly easy	Very easy	Don't know	No response
	%	%	%	%	%	%	%
Anabolic steroids	7.0	12.7	13.9	10.4	3.4	50.8	1.9
Human growth hormones (hGH)	11.8	15.1	8.2	5.0	2.0	55.5	2.3
Designer steroids like Tetrahydrogestrinone (THG)	12.4	15.8	8.0	3.2	1.5	57.0	2.0
Erythropoietin (EPO) and other similar substances	12.0	16.5	7.4	3.3	1.5	57.1	2.1
Beta-blockers	6.8	10.2	9.4	7.1	2.5	61.8	2.2
Diuretics	3.6	6.3	7.5	18.4	14.9	47.3	2.1

Comment:

These data are useful for determining what drugs are seen to be most readily available. High levels of 'don't know' are a desirable finding. Changes in availability can be tracked over time to assess the effects of any Agency efforts that targeted the distribution of particular drugs.

A7.2 Optional measures

(ii) Access to banned performance enhancing substances from specific groups

Item:

Q#. If you wanted to get and use a banned performance-enhancing substance, which of the following people, if any, do you think would help you if you asked them to?

	Would definitely help me	Would probably help me	Might or might not help me	Probably would not help me	Definitely would not help me	Don't know
1. Your coach	1	2	3	4	5	9
2. Parents	1	2	3	4	5	9
3. Team mates/training partners	1	2	3	4	5	9
4. Team doctor	1	2	3	4	5	9
5. Sports psychologist	1	2	3	4	5	9
6. Trainer	1	2	3	4	5	9

Comment:

These data clearly could be of considerable interest to an Agency and follow-up investigations could be conducted where 15% or more indicated a person/group would 'definitely' help them.

(iii) Perceived access to medical advice on use of banned performance enhancing substances

Item:

Q#. If you wanted to use a banned performance-enhancing substance, how easy would it be to get good medical advice on how to use the substance?

Probably impossible 1
Very hard. 2
Fairly hard. 3
Fairly easy. 4
Very easy. 5
Don't know 9

Comment:

Again these data clearly could be of considerable interest to an Agency and follow-up investigations could be conducted where 15% or more indicated this would be 'very' easy.

(iv) Perceived efforts of relevant authorities in enforcing laws against trafficking of doping methods/substances

Items:

Q#. How serious do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (country)?

	Not at all serious	Not serious	A little serious	Quite serious	Very serious
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

Q#. Overall, how effective do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (country)?

	Not at all effective	Not effective	A little effective	Quite effective	Very effective
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

Comment:

Deterrence efforts would be undermined where substantial proportions did not consider Police or Customs officers were serious about the issue and their prevention of trafficking efforts not effective. Such views, other things being equal, could facilitate an athlete's decision to seek or accept a banned substance.

A8. Beliefs about the Affordability of Doping Methods/Substances

A8.1 Minimum/basic items

Perceived affordability of performance-enhancing substances:

Item:

Q#. How expensive would it be for you personally to buy each of the following types of substances?

	Very cheap	Quite cheap	Neither	Quite expensive	Very expensive	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Distribution of responses in a sample of elite Australian athletes:

Table 4.17 shows the results for a sample of elite Australian athletes.

Table 4.17: Australian athletes' Perceived affordability of six performance-enhancing substances (N=1,237)

	Very cheap	Quite cheap	Neither	Quite expensive	Very expensive	Don't know	No response
	%	%	%	%	%	%	%
Anabolic steroids	0.2	0.6	1.6	11.3	25.6	58.6	1.9
Human growth hormones (hGH)	0.3	0.2	0.9	5.7	27.8	63.1	1.9
Designer steroids like Tetrahydrogestrinone (THG)	0.3	0.2	0.6	5.4	27.6	63.9	1.9
Erythropoietin (EPO) and other similar substances	0.4	0.6	0.5	5.4	26.9	64.3	1.9
Beta-blockers	0.4	1.4	2.2	8.6	15.4	69.8	2.1
Diuretics	3.0	10.2	6.3	8.4	11.2	58.9	2.1

Comment:

Again, as for availability, these data are useful for identifying which drugs are and are not believed to be affordable, and hence, in conjunction with the availability data, to determine whether the Agency should be targeting specific drugs. Again, a high percentage of 'don't knows' is a desirable result.

A9. Beliefs about Other Athletes' Attitudes Towards and Use of Doping Methods/Substances

A9.1 Minimum/basic items

(i) Descriptive norms

Definition: These norms relate to peoples' perceptions of how others actually behave; that is, the norms of 'what is' (Cialdini, Reno & Kallgren, 1990). Within the context of the SDCM, descriptive norms reflect an athlete's perceived prevalence of other athletes' use of doping. If athletes believe that a majority or most other athletes in their sport are doping, then they will be more susceptible to engaging in that behavior.

Items:

Q#. The following statements are intended to provide an insight into your beliefs regarding other athletes' use of doping.

Percentage (%)

1. Out of 100%, how many athletes in your sport do you believe engage doping to enhance their performance..... _____
2. Out of 100%, how many elite athletes in your country do you believe engage in doping to enhance their performance? ..... _____
3. Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 2 years to enhance their performance? ..... _____

4. Out of 100%, how many coaches in your sport do you believe would encourage their athletes to use doping to enhance their performance? ..... _____
5. Out of 100%, how many coaches in elite sports in your country do you believe would encourage their athletes to use doping to enhance their performance? ..... _____

Comment:

The average percentages assigned to each of these five measures provide useful information to a NADO, and particularly with respect to beliefs about coaches. Where substantial proportions consider that 30% or more other athletes (or coaches) engage in (or encourage) doping, then the Agency is facing a situation where doping could become normalized and hence resistant to anti-doping efforts.

A9.2 Optional measure

(ii) Subjective norms

Definition: These norms relate to peoples' perceptions of what they think other people would approve or disapprove of; that is, the norms of 'what ought' (Cialdini, Reno & Kallgren, 1990). Within the context of the SDCM, subjective norms reflect one's beliefs about important others' opinions towards them doping. Basically, these types of norms allow people to determine what types of behaviors are or are not acceptable in society or their social context (e.g., sport).

The following three items are general items related to Reference Group opinion covered in Section A6.

Items:

Q#. The following statements are intended to provide an insight into your beliefs about other people's opinions towards the athlete using doping.

	Strongly disagree			Neutral			Strongly agree
1. Most people I know would *approve* of me using prohibited substances to enhance my performance during this season	1	2	3	4	5	6	7
2. People who are important to me would *approve* of me using prohibited substances to enhance my performance during this season	1	2	3	4	5	6	7
3. Most people close to me expect me to use prohibited substances to enhance my performance during this season	1	2	3	4	5	6	7

Comment:

Again, the distributions of responses to each item are of interest, although an average score of the three items could also be computed for cross tabulations with other variables. Again these variables provide the NADO with the social context within which athletes will make decisions about doping. With respect to percentages endorsing the various items, we would again suggest that where 30% or more score 5 or more on these items, then the Agency could consider investigating the reasons why athletes hold these beliefs and develop ways of countering these beliefs. For example, if surveys of the general public show that an overwhelming majority of people from all walks of life are strongly opposed to doping, then these findings could be widely publicized in the mass and sports media.

A10. Beliefs about Societal Influences on Doping

It is likely that athletes who believe that sport and the Olympics have become too commercialized would be more likely to dope if given the opportunity. Agencies may or may not wish to include one or all of the following items to gain a better understanding of their athletes' beliefs in this regard.

4.10.1 Minimum/basic items

Q#. How much pressure, directly or indirectly, do you think the (country) government or the (country) Olympic Committee puts on elite athletes to win Olympic gold medals?

No pressure at all 1
A little pressure 2
Moderate pressure 3
A lot of pressure 4

Q#. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased a 'win at all costs' attitude amongst elite athletes?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

Q#. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased the temptation amongst elite athletes to use banned performance enhancing substances?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

Distribution of responses for an Australian sample of elite athletes:

Table 4.18 shows the distribution of responses for an Australian elite athlete survey. It is clear from these data that a substantial proportion of athletes in Australian feel pressured by their government, with 29% nominating 'a lot of pressure".

Table 4.18: Perceived pressure exerted by the Australian government on athletes to win Olympic gold medals (N=1,237)

	%
A lot of pressure	29.1
Moderate pressure	40.3
A little pressure	20.4
No pressure at all	7.5
No response	2.7
Total	**100.0**

Comment:

These individual items are useful to inform agencies such as NADOs about the sporting context in which athletes make decisions about doping, and particularly the item that gauges the amount of pressure governments are seen to place on their athletes to win Olympic gold medals. Where substantial proportions believe governments are placing 'a lot' of pressure on athletes, then the NADO could investigate why government policies or practices might be contributing to this pressure.

Where substantial proportions believe that commercialization has increased a 'win at all costs' attitude and the temptation to dope, there is probably little a NADO can do other than be mindful of such and introduce discussion of the relative benefits and disadvantages of commercialization in education programs.

B. Athlete Characteristics Modules

B11. Performance-Enhancing Drug Use

Use of banned performance-enhancing substances and methods.

B11.1 Minimum/basic items

- Self-reported use of banned performance-enhancing substances in general.
- Self-reported use of specific banned performance-enhancing substances and methods in 'last 12 months'.
- Whether ever tested positive for a banned performance-enhancing substance.

Items:

Q#. Which one of the following most applies to you?

I have never considered using a banned performance-enhancing substance 1
At one stage I thought briefly about using a banned performance-enhancing substance 2
At one stage I thought quite a bit about using a banned performance-enhancing substance 3
I still think occasionally about using a banned performance-enhancing substance because other athletes are using them 4
I briefly used a banned performance-enhancing substance in the past but no longer do so 5
I occasionally use a banned performance-enhancing substance now for specific purposes 6
I regularly try or use banned performance-enhancing substances 7

Q#. In the last 12 months, how often have you used any of the following, for whatever reason?

	Have never used	Did not use in the last 12 months	1 to 2 times	3 to 5 times	6 to 10 times	More than 10 times
1. Anabolic steroids	1	2	3	4	5	6
2. Beta-blockers	1	2	3	4	5	6
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	6
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	6
5. Human growth hormones (hGH)	1	2	3	4	5	6
6. Diuretics	1	2	3	4	5	6
7. Doping methods	1	2	3	4	5	6
8. Alphabodies	1	2	3	4	5	6

Q#. Have you ever tested positive for a banned performance-enhancing substance?

Yes 1
No 2

Comment:

These data are self-evidently of interest to a NADO. Various surveys around the globe yield a range of athletes reporting that they currently or have ever used banned performance enhancing substances, from very low levels in elite athletes to up to 20% or more in samples of bodybuilders.

B12. Use of Nutritional Supplements and Beliefs about Therapeutic Use Exemptions (TUEs)

Use of nutritional substances has been found in some studies to correlate with doping susceptibility. This commonality no doubt reflects a general favorable disposition towards performance enhancing substances and technologies. There have been few studies of athletes' beliefs about Therapeutic Use Exemptions and hence little is known about athletes with such exemptions and the impact it has – if any – on attitudes to doping (Overbye & Wagner, 2012). It would be anticipated that athletes who considered such exemptions were being abused by other athletes would be more susceptible to doping than if they believed that such exemptions were 'legitimate'.

B12.1 Minimum/basic item

(i) Use of nutritional supplements

Item:

Q#. How often have you used any of these nutritional supplements in the past 12 months?

	Never	Rarely	Sometimes	Frequently	Very frequently	Systematically
1. Vitamin or mineral supplements	1	2	3	4	5	6
2. Herbal products	1	2	3	4	5	6
3. Creatine	1	2	3	4	5	6
4. Sports drinks	1	2	3	4	5	6
5. Energy bars	1	2	3	4	5	6
6. Caffeine	1	2	3	4	5	6
7. Protein-carbohydrate shakes	1	2	3	4	5	6

B12.2 Optional measure

(ii) Therapeutic Use Exemptions

Item:

Q#. To what extent do you think that athletes who have been given Therapeutic Use Exemptions have been thoroughly evaluated and that their exemptions are justified?

None justified 1
Most not justified 2
Some are justified, others are not 3
Most justified 4
All justified 5
Don't know 9

Comment:

NADOs can note the most popular nutritional supplements and ensure that education programs provide clear warnings that athletes should take diligent steps to ensure that their supplements will not lead to inadvertent consumption of a banned substance.

Where a substantial proportion of athletes do not believe that all or most TUEs are justified, then the Agency could investigate why this is so and take steps to correct the situation. This would be particularly important where these data are found via crosstabs to be related to doping susceptibility.

B13. Demographics and Sporting Background

Data on athletes' sporting background and socio-demographic information.

B13.1 Minimum/basic items

(i) Sporting background

Items:

Q#. What is the main sport you are or have been involved in?

_____

Q#. How many years have you competed in your main sport?

Less than 1 year (or season 1
1 or 2 years (or seasons 2
More than 2 but less than 5 years (or seasons 3
5 or more years (or seasons 4

Q#. What is the highest level you have competed at?

Olympic games 1
World championship events/international events 2
National competition 3
State competition 4
Regional competition 5
City/district competition 6

Q#. Do you hold or have you ever held titles?

Yes – National title 1
Yes – International title 2
Yes – State title 3
No 4

Q#. Have you ever had a Therapeutic Use Exemption?

Yes – and still have 1
Yes – but no longer 2
No 3

Q#. Do you compete in events for athletes with a disability?

Yes.....1
No 2

(ii) Socio-demographic information

Items:

Q#. What is your age?

..... _____

Q#. Are you:

Male.....1
Female 2

Q#. What is your highest level of education? (adapted to country)

Completed Year 9 or less.....1
Completed Year 10 2
Completed Year 11 3
Completed Year 12 4
Some technical college 5
Some University.....6
Currently enrolled in technical college.....7
Currently enrolled in University 8
Completed technical college 9
Completed University..... 10

Q#. To what extent do you currently derive income from your participation in sport? Include here both direct payments and winnings as well as sponsorships, endorsements and scholarships.

No income at all from sport.....1
Occasional income from sport.....2
Regular income but less than half of total income.....3
About half my income from sport 4
More than half from sport, but not all my income 5
All or almost all of my income from sport.....6

Q#. What is your total annual income from all sources? (adapted to country)

Less than 10,000 1
10,000 to 19,999.....2
20,000 to 29,999.....3
30,000 to 49,999.....4
50,000 to 69,999.....5
70,000 to 99,999.....6
100,000 or more 7

Comment:

The above data are not only necessary to assess the make-up of the sample and its representativeness, but to also look at whether the various doping use, attitude and susceptibility measures differ amongst different groups.

B14. Overall Susceptibility to Doping; Intention to Dope in the Near Future; and Overall Attitude to Doping

Of these three measures, we believe that 'susceptibility to doping' is the most important variable to measure with respect to identifying athletes most likely to dope. However, if space permits, measures of all three variables can be included. We have chosen the simplest evidence-based items.

B14.1 Minimum/basic items

(i) Susceptibility to doping

Susceptibility to performance-enhancing substances use is measured via a hypothetical scenario format as in Bamberger and Yaeger (1997; Corbin et al., 1994). It has been used by the authors in several published studies. It consists of the following three measures.

Items:

Q#. If you were offered a banned performance enhancing substance under medical supervision at low or no financial cost and the banned performance enhancing substance could make a significant difference to your performance and was currently not detectable, how much consideration do you think you might give to this offer?

None at all 1
A little consideration 2
Some consideration 3
A lot of consideration 4

Q#. Given the pressures athletes are often under to win, how confident are you that you could refuse this offer?

Very confident could refuse 1
Quite confident could refuse 2
Not very confident could refuse 3
Not confident at all could refuse 4
Wouldn't want to refuse 5

Q#. How confident are you in being able to resist pressure from your team mates to use a banned substance?

Very confident could resist 1
Quite confident could resist 2
Not very confident could resist 3
Not confident at all could resist 4
Wouldn't want to resist 5

Distribution of responses in an Australian sample of elite athletes:

Table 4.19 shows that in this sample of elite Australian athletes, a majority would give the offer no consideration at all (57%). Nevertheless, 16% would give the offer 'some' or 'a lot' of consideration, and a further 25% 'a little' consideration.

Table 4.19: Amount of consideration athletes would give to an offer of a banned performance-enhancing substance (N=1,237)

	%
A lot of consideration	7.9
Some consideration	8.4
A little consideration	25.1
None at all	56.7
No response	1.9
Total	**100.0**

Regardless of how much consideration they would give the offer, Table 4.20 shows that only 3.8% stated they would not be confident in refusing the offer, with almost three in four claiming to be 'very' confident they could refuse the offer.

Table 4.20: How confident athletes feel they could refuse an offer of a banned performance-enhancing substance (N=1,237)

	%
Very confident could refuse	73.6
Quite confident could refuse	20.0
Not very confident could refuse	2.7
Not confident at all could refuse	1.1
Wouldn't want to refuse	0.8
No response	1.8
Total	**100.0**

Comment:

This 'amount of consideration' measure of doping susceptibility is a key measure and likely to reflect an athlete's disposition more genuinely than being asked outright whether or not they would accept or refuse such an offer. In the above case, just over 40% stated they would give the offer at least a little consideration. This reflects that in other facilitating circumstances (e.g., lowered deterrence perceptions; heightened financial rewards; situational circumstances such as requiring a quick recovery from injury; etc), a substantial number of such athletes could succumb to doping. At the very least, these data show that when asked an indirect question about doping, they reflect a far more positive disposition than when asked directly. These data reinforce that NADOs must maintain a high and sustained anti-doping education program to ensure as far as possible that susceptible

athletes are not placed in situations where they may succumb to doping temptations. Of most interest in the above data would be a crosstab of these two variables to identify what proportion would give the offer some consideration and are not very confident they could refuse the offer.

(ii) Intention to dope in the near future

Item:

Q#. Do you intend to use prohibited substances or methods to enhance your performance or gain a competitive edge against your opponents during this season?

Definitely not.....1
Probably not.....2
Might or might not.....3
Probably will.....4
Definitely will 5

Comment:

As previously, a figure of 30% or more nominating '3' or more would indicate a substantial proportion susceptible to doping and likely to accept offers to dope. The proportion nominating '5' would clearly be of interest.

(iii) Attitude to doping

Definition: For the purposes of this project, one's overall attitude towards some object or behavior, is defined as one's overall positive or negative feeling towards that object or engaging in that behavior. There are a number of ways of measuring attitudes. We include two simple attitude measures as our primary focus is on doping susceptibility as the variable of most interest to anti-doping agencies. Note also that the focus is on measuring attitudes to *using* performance-enhancing substances rather than attitudes to performance-enhancing substances per se.

Items:

Q#. The following statements are designed to help us gather information about athletes' thoughts on doping in sport. Please provide your rating by circling the appropriate response that best represents your position about these issues. Numbers "1" and "7" indicate a very strong position; and "4" indicates that you are undecided as to your position on that issue.

Using prohibited substances or methods to enhance my performance in the next 12 months would be.

Bad idea ..... 1..... 2..... 3.....4.....5 .....6 .....7..... Good idea

Of no use to me ..... 1..... 2..... 3.....4.....5 .....6 .....7..... Very useful to me

Not beneficial ..... 1..... 2..... 3.....4.....5 .....6 .....7..... Beneficial

The above three items are sufficient, but the following items can be added if of interest and space permits:

Unethical..... 1 ..... 2 ..... 3 ..... 4..... 5..... 6..... 7 ..... Ethical

Dangerous..... 1 ..... 2 ..... 3 ..... 4..... 5..... 6..... 7 ..... Safe

Unhealthy..... 1 ..... 2 ..... 3 ..... 4..... 5..... 6..... 7 ..... Healthy

Wrong..... 1 ..... 2 ..... 3 ..... 4..... 5..... 6..... 7 ..... Right

Unacceptable..... 1 ..... 2 ..... 3 ..... 4..... 5..... 6..... 7 ..... Acceptable

Overall attitude scores are obtained by adding the scores for all items.

A useful single-item item related to attitude measures the athlete's perceived necessity to use performance-enhancing substances to perform at the highest levels in their sport (following the work of Petróczi, 2002).

Item:

Q#. In your sport, how necessary do you believe it is for athletes to use banned performance-enhancing substances at least at some time, to perform at the very highest levels?

Definitely have to use.....1
Probably have to use 2
Might or might not have to use.....3
Probably don't have to use.....4
Definitely don't have to use 5

Distribution of responses in a sample of elite Australian athletes:

Table 4.21 shows that just over two-thirds of these athletes responded 'definitely' don't have to use banned performance-enhancing substances to perform at the highest levels (69%).

Table 4.21: Perceived necessity to use banned performance-enhancing substances to perform at the very highest levels

	N=1,237
	%
Definitely have to use	2.3
Probably have to use	3.3
Might or might not have to use	8.1
Probably don't have to use	13.8
Definitely don't have to use	69.2
No response	3.3
Total	**100.0**

Comment:

The above item is clearly of interest to NADOs, and particularly where a substantial proportion (20% or more) hold a positive attitude to doping or believe a banned substance is necessary for them to perform at the highest levels. With respect to Table 4.19, the recommendation to the Agency would be to continue to monitor the situation.

SECTION 5: A COMPLETE LISTING OF ALL QUESTIONNAIRE MEASURES: QUESTIONNAIRE MODULES

This section provides a listing of 14 questionnaire modules relevant to anti-doping research. The listing includes all basic measures in the standard questionnaire as well as optional extras that can be used for more specific purposes.

5.1 Morality and Cheating Measures

5.1.1 Moral decision-making (attitudes to cheating and other behaviors)

Q#. In the list below there are some things that people have said about cheating and fair play in sport. Please read each one and circle one of the numbers beside it to show how much you agree or disagree with it. Some of these are not very different so you will have to carefully examine each statement.

		Strongly disagree		Neutral		Strongly agree
1.	It is ok to cheat if nobody knows	1	2	3	4	5
2.	Wininng and losing are a part of life	1	2	3	4	5
3.	I sometimes try to wind up the opposition	1	2	3	4	5
4.	I would cheat if I thought it would help me win	1	2	3	4	5
5.	It is ok to lose sometimes because in life you don't win everything	1	2	3	4	5
6.	It is not against the rules to psych people out so it's ok to do so	1	2	3	4	5
7.	If other people are cheating, I think I can too	1	2	3	4	5
8.	If you win properly, it feels better than if you did it dishonestly	1	2	3	4	5
9.	Sometimes I waste time to unsettle the opposition	1	2	3	4	5
10.	I cheat if I can get away with it	1	2	3	4	5
11.	You have to think about the other people and not just winning	1	2	3	4	5
12.	If I don't want another person to do well then I put them off a bit	1	2	3	4	5
13.	When I get the chance, I fool the official	1	2	3	4	5
14.	I get annoyed by people trying to "win at all Costs"	1	2	3	4	5
15.	It is a good idea to upset your opponent	1	2	3	4	5
16.	I always play by the rules	1	2	3	4	5
17.	Winning is all that matters	1	2	3	4	5
18.	I would never psych anybody out	1	2	3	4	5

	Strongly disagree		Neutral		Strongly agree
19. I would cheat if I thought it would help me or my team win	1	2	3	4	5
20. It is understandable that players swear in the heat of the moment	1	2	3	4	5

5.1.2 Moral disengagement (short)

Q#. A number of statements describing thoughts that players (or athletes) might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

	Strongly disagree			Neutral			Strongly agree
1. It is ok for players lie to officials if it helps them or their team	1	2	3	4	5	6	7
2. Bending the rules is a way of evening things up	1	2	3	4	5	6	7
3. (Shouting at an opponent is okay as long as it doesn't end in violent conduct	1	2	3	4	5	6	7
4. It is unfair to blame players who only play a small part in unsportsmanlike tactics used by their team	1	2	3	4	5	6	7
5. A player should not be blamed for injuring an opponent if the coach reinforces such behaviour	1	2	3	4	5	6	7
6. Insults among players do not really hurt anyone	1	2	3	4	5	6	7
7. It is okay to treat badly an opponent who behaves like an animal	1	2	3	4	5	6	7
8. Players who are mistreated have usually done something to deserve it	1	2	3	4	5	6	7

5.1.3 Moral disengagement

Q#. A number of statements describing thoughts that players (or athletes) might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

	Strongly disagree			Neutral			Strongly agree
1. It is okay to be hostile to an opponent who has insulted your team-mate/s	1	2	3	4	5	6	7
2. Bending the rules is a way of evening things up	1	2	3	4	5	6	7
3. Shouting at an opponent is okay as long as it does not end in violent conduct	1	2	3	4	5	6	7
4. A player should not be blamed for using illegal tactics if everyone on the team does it	1	2	3	4	5	6	7
5. A player is not responsible for acting aggressively if this is encouraged by his/her parents	1	2	3	4	5	6	7
6. Mocking an opponent does not really hurt him/her	1	2	3	4	5	6	7
7. It is okay to treat badly an opponent who behaves like an animal	1	2	3	4	5	6	7
8. If a player is mocked by an opponent, it is the opponent's fault if the player then tries to injure him/her	1	2	3	4	5	6	7
9. It is okay for players to lie to officials if it helps their team	1	2	3	4	5	6	7
10. Injuring an opponent is a way of teaching him/her a lesson	1	2	3	4	5	6	7
11. Compared to physical violence, verbally provoking an opponent is not that bad	1	2	3	4	5	6	7
12. It is unfair to blame players who only play a small part in unsportsmanlike tactics used by their team	1	2	3	4	5	6	7
13. A player should not be blamed for injuring an opponent if the coach reinforces such behavior	1	2	3	4	5	6	7
14. Insults among players do not really hurt anyone	1	2	3	4	5	6	7
15. If an opponent acts like an animal he/she deserves to be treated like one	1	2	3	4	5	6	7
16. Players that get mistreated have usually done something to deserve it	1	2	3	4	5	6	7
17. Fouling an opponent is okay if it discourages him/her from injuring your team-mates	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
18. Acting aggressively is just a way of showing you are a tough opponent	1	2	3	4	5	6	7
19. Mocking an opponent is not bad compared to injuring him/her	1	2	3	4	5	6	7
20. A team decision to use unsportsmanlike tactics is just that, and not the responsibility of any individual on the team	1	2	3	4	5	6	7
21. If players are not disciplined for unsportsmanlike conduct they should not be blamed for behaving this way	1	2	3	4	5	6	7
22. Aggressive language toward an opponent does not actually harm anyone	1	2	3	4	5	6	7
23. Some opponents deserve to be treated like animals	1	2	3	4	5	6	7
24. If a player retaliates to something an opponent has done, this is the opponent's fault	1	2	3	4	5	6	7
25. Fighting is okay if it is done to protect a team-mate	1	2	3	4	5	6	7
26. Arguing with officials is a way of keeping them on their toes	1	2	3	4	5	6	7
27. Winding an opponent up is nothing compared to screaming abuse in his/her face	1	2	3	4	5	6	7
28. Players should not take responsibility for negative consequences of their actions if they are following team decisions	1	2	3	4	5	6	7
29. A player should not be blamed for arguing with officials if he/she has seen the coach doing it	1	2	3	4	5	6	7
30. Teasing an opponent does not really hurt him/her	1	2	3	4	5	6	7
31. If an opponent does not act humanly he/she should be made to suffer	1	2	3	4	5	6	7
32. A player should not be held responsible if he/she retaliates when fouled	1	2	3	4	5	6	7

5.1.4 Moral identity

Q#. Here are some traits that might describe a person: caring, compassionate, fair, friendly, generous, helpful, hardworking, honest, and kind. The person with these characteristics could be you or it could be someone else. For a moment, visualize in your mind the kind of person who has these characteristics. Imagine how that person would think, feel, and act. When you have a clear image of what this person would be like, answer the following questions.

	Strongly disagree				Strongly agree
1. It would make me feel good to be a person who has these characteristics	1	2	3	4	5
2. Being someone who has these characteristics is an important part of who I am	1	2	3	4	5
3. I would be ashamed to be a person who has these characteristics	1	2	3	4	5
4. Having these characteristics is not really important to me	1	2	3	4	5
5. I strongly desire to have these characteristics	1	2	3	4	5
6. I often buy products that communicate the fact that I have these characteristics	1	2	3	4	5
7. I often wear clothes that identify me as having these characteristics	1	2	3	4	5
8. The types of things that I do in my spare time (e.g., hobbies) clearly identify me as having these characteristics	1	2	3	4	5
9. The kinds of books and magazines that I read identify me as having these characteristics	1	2	3	4	5
10. The fact that I have these characteristics is communicated to others by my membership in certain organizations	1	2	3	4	5
11. I am actively involved in activities that communicate to others that I have these characteristics	1	2	3	4	5

5.1.5 Moral stance

Q#. Regardless of whether you believe performance enhancing substances or methods (PESM) should be banned or allowed, which of the following statements best describes your own personal feelings about deliberately using banned PESM?

I believe deliberately using banned PESM to improve performance is morally wrong under any circumstances 1

I believe deliberately using banned PESM to improve performance is morally OK under some circumstances, but wrong under others..... 2

I believe deliberately using banned PESM to improve performance is morally OK under any circumstances 3

5.1.6 Moral emotions

Q#. If you were caught using banned performance enhancing substances or methods, to what extent would you experience the following feelings:

	Not at all				A great extent
1. Ashamed	1	2	3	4	5
2. Embarrassed	1	2	3	4	5
3. Guilty	1	2	3	4	5

5.2 Legitimacy Perceptions

5.2.1 Distributive justice

Q#. How fair is the (insert name of NADO) in terms of treating all athletes equally?

Very fair 1
Fair 2
Unfair 3
Very unfair 4
Don't know 9

Q#. How secure is the (insert name of NADO)'s drug testing procedures in (country)? That is, in the taking of samples and the care of samples?

Very secure 1
Quite secure 2
Not really secure.....3
Not at all secure.....4
Don't know 9

Q#. How accurate do you feel the current drug tests are in terms of being able to correctly identify the following substances?

	Very accurate	Quite accurate	A little accurate	Not accurate	Not at all accurate	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

Q#. How accurate do you feel the current drug tests are in terms of being able to correctly identify banned performance enhancing substances?

Very accurate 1
Quite accurate 2
A little accurate 3
Not accurate 4
Not at all accurate 5
Don't know 9

5.2.2 Procedural justice

Q#. How satisfied are you that athletes who appeal a positive test in (insert name of country) will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied 3
Very dissatisfied 4
Don't know 9

Q#. How satisfied are you that athletes in your sport who test positive will be given a fair hearing before a decision is made about applying a penalty?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied 3
Very dissatisfied 4
Don't know 9

Q#. How satisfied are you that athletes who appeal a positive test before the Court of Arbitration in Sport will be given a fair hearing?

Very satisfied 1
Somewhat satisfied 2
Somewhat dissatisfied 3
Very dissatisfied 4
Don't know 9

5.2.3 Interactional justice

Q#. Did you find the experience of being tested traumatic or upsetting in any way?

No 1
Yes – somewhat 2
Yes – very much 3

Q#. How would you describe the conduct of the testing personnel?

(a) Courteous OR Rude Or Neither

1 ..... 2.....3

(b) Helpful OR Unhelpful Or Neither

1 ..... 2.....3

(c) Friendly OR Unfriendly Or Neither

1 ..... 2.....3

(d) Sensitive OR Insensitive Or Neither

1 ..... 2.....3

5.3 Beliefs about the Benefits of Doping

5.3.1 Perceived performance-enhancing effects of banned substances and methods

Q#. If you were to use the following substances, how likely is it that these substances would improve your performance in your sport?

	Definitely would not	Probably would not	Might or might not	Probably would	Definitely would	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9

Q#. If you were to use a banned performance enhancing substance of your choice, how likely is it that you would improve your performance in your sport?

Definitely would not 1
Probably would not 2
Might or might not 3
Probably would.....4
Definitely would 5
Don't know 9

5.3.2 Likelihood and desirability of potential positive outcomes for performing well in sport

Q#. How much would you personally like these outcomes for performing well in your sport?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

Q#. To what extent does your sport offer athletes these outcomes if they perform well?

	A lot	A little	Not at all
1. National celebrity status	1	2	3
2. Lucrative financial sponsorship deals	1	2	3
3. Personal best achievements	1	2	3
4. Opportunities for remaining in the sport as coach, trainer or administrator	1	2	3
5. Future financial security	1	2	3
6. International celebrity status	1	2	3

5.4 Beliefs about the Harms of Doping and the Consequences if Caught

5.4.1 Threats of enforcement

Q#. How likely is it that athletes at your level would be drug tested at least once a year?

(a) In competition at least once a year:

Very likely	1
Quite likely	2
A little likely	3
Not likely	4
Not at all likely	5
Don't know	9

(b) Out of competition at least once a year:

Very likely	1
Quite likely	2
A little likely	3
Not likely	4
Not at all likely	5
Don't know	9

Q#. It has been said that athletes who take banned substances can use various methods to avoid testing positive.

(a) From what you know or have heard, if you were to take banned performance-enhancing substances while competing, how likely do you think that you could get away with it if you really tried to?

Very likely 1
Quite likely.....2
A little likely 3
Not likely.....4
Not at all likely 5
Don't know 9

(b) From what you know or have heard, if you were to take banned performance-enhancing substances out of competition, how likely do you think that you could get away with it if you really tried to?

Very likely 1
Quite likely.....2
A little likely 3
Not likely.....4
Not at all likely 5
Don't know 9

Q#. From what you know or have heard, are the penalties for a positive drug test in your sport severe or lenient?

Very severe 1
Fairly severe.....2
Fairly lenient 3
Very lenient 4
Don't know 9

5.4.2 Threats to health of performance-enhancing substances use

Q#. How much harm to your health do you think would be caused by using each of the following substances for a short time say up to two months?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2. Beta-blockers	1	2	3	4	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	9
5. Human growth hormones (hGH)	1	2	3	4	9
6. Diuretics	1	2	3	4	9

Q#. How much harm to your health do you think would be caused by using each of the following substances regularly?

	No harm	A little harm	Some harm	A lot of harm	Don't know
1. Anabolic steroids	1	2	3	4	9
2. Beta-blockers	1	2	3	4	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	9
5. Human growth hormones (hGH)	1	2	3	4	9
6. Diuretics	1	2	3	4	9

5.5 Personality Measures

5.5.1 Self-efficacy to refrain from doping

Q#. How confident are you in being able to resist pressure from your team mates to use a banned substance?

Very confident could resist 1
Quite confident could resist 2
Not very confident could resist 3
Not confident at all could resist 4
Wouldn't want to resist 5

Q#. Please rate the extent to which you currently feel that whether or not you take a banned performance enhancing substance in the future is under your personal control?

Completely out of my control						Completely under my control
1	2	3	4	5	6	7

5.5.2 Doping self-efficacy

Q#. Here are several scenarios that you may have encountered, or may come across during your career in sport. Please rate the extent to which you currently feel capable in being able to avoid or overcome these situations using the scale below.

	Not at all capable						Completely capable
1. To avoid using banned PEDMs before a competition even when you know you can get away with it	1	2	3	4	5	6	7
2. To avoid using banned PEDMs in sport even when you feel down physically	1	2	3	4	5	6	7
3. To resist the temptation to use banned PEDMs to improve your performance	1	2	3	4	5	6	7
4. To resist the temptation to use banned PEDMs to have a body that others would admire, even when no-one would ever know	1	2	3	4	5	6	7

	Not at all capable						Completely capable
5. To resist the temptation to use banned PEDMs to have a great appearance	1	2	3	4	5	6	7
6. To avoid using banned PEDMs to have your body look as you would like	1	2	3	4	5	6	7
7. To avoid using banned PEDMs to get results more quickly, even when no-one would ever know	1	2	3	4	5	6	7
8. To not use banned PEDMs, despite the pressure to do so from others	1	2	3	4	5	6	7
9. To avoid using banned PEDMs to improve your performance in the sport you practice, even when you know that it will not have side-effects	1	2	3	4	5	6	7
10. To avoid using banned PEDMs, even when most of those who practice your sport use them	1	2	3	4	5	6	7

5.5.3 Sport motivation

Q#. Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you are participating in the current competitive season; if you are not currently participating in a competitive season, please consider your reasons for participation during your most recent competitive season.

I participate in my sport because ….

	Not at all true			Somewhat true			Very true
1. because I enjoy it	1	2	3	4	5	6	7
2. because it's a part of who I am	1	2	3	4	5	6	7
3. because it's an opportunity to just be who I am	1	2	3	4	5	6	7
4. because I would feel ashamed if I quit	1	2	3	4	5	6	7
5. but the reasons why are not clear to me	1	2	3	4	5	6	7
6. because I would feel like a failure if I quit	1	2	3	4	5	6	7
7. but I wonder what's the point	1	2	3	4	5	6	7
8. because what I do in sport is an expression of who I am	1	2	3	4	5	6	7
9. because the benefits of sport are important to me	1	2	3	4	5	6	7
10. because I like it	1	2	3	4	5	6	7
11. because I feel obligated to continue	1	2	3	4	5	6	7
12. but I question why I continue	1	2	3	4	5	6	7
13. because people push me to play	1	2	3	4	5	6	7
14. because if I don't other people will not be pleased with me	1	2	3	4	5	6	7
15. because it teaches me self-discipline	1	2	3	4	5	6	7

	Not at all true						Somewhat true						Very true
16. because I would feel guilty if I quit	1		2		3		4		5		6		7
17. because I find it pleasurable	1		2		3		4		5		6		7
18. but I question why I am putting myself through this	1		2		3		4		5		6		7
19. because it is a good way to learn things which could be useful to me in my life	1		2		3		4		5		6		7
20. in order to satisfy people who want me to play	1		2		3		4		5		6		7
21. because it allows me to live in a way that is true to my values	1		2		3		4		5		6		7
22. because I value the benefits of my sport	1		2		3		4		5		6		7
23. because I feel pressure from other people to play	1		2		3		4		5		6		7
24. because it's fun	1		2		3		4		5		6		7

5.5.4 Self-presentational concerns

Q#. Athletes have different perceptions as to how others may perceive them. The following statements capture these differences in self-perceptions. For each of the following statements, circle the number that best represents the extent to which the item corresponds to you with respect to the main sport you currently compete in.

During competition I worry that other people may perceive me as ….

	Never				Always
1. Appearing untalented	1	2	3	4	5
2. Appearing not to perform or execute perfectly	1	2	3	4	5
3. Appearing athletically incompetent	1	2	3	4	5
4. Appearing underskilled	1	2	3	4	5
5. Appearing to lack ability	1	2	3	4	5
6. Appearing unqualified	1	2	3	4	5
7. Appearing flabby	1	2	3	4	5
8. Appearing physically untoned	1	2	3	4	5
9. Appearing ugly or unpleasant in my uniform	1	2	3	4	5
10. Appearing physically unattractive	1	2	3	4	5
11. Appearing too small or too big in my uniform	1	2	3	4	5
12. Appearing exhausted	1	2	3	4	5
13. Appearing fatigued	1	2	3	4	5
14. Appearing tired	1	2	3	4	5
15. Appearing to lack energy	1	2	3	4	5
16. Appearing to lose composure	1	2	3	4	5
17. Appearing unfocused	1	2	3	4	5
18. Appearing nervous under pressure	1	2	3	4	5
19. Appearing to lack necessary focus	1	2	3	4	5
20. Appearing underactivated	1	2	3	4	5
21. Appearing distressed	1	2	3	4	5

5.5.5 Goal orientations

Q#. Success in sport can mean different things to different people. The statements in this section of the survey capture a variety of ways in which athletes define their sporting success. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

In sport, I feel most successful when I ….

	Strongly disagree				Strongly agree
1. I reach personal goals	1	2	3	4	5
2. I show clear personal improvement	1	2	3	4	5
3. I perform to the best of my ability	1	2	3	4	5
4. I overcome difficulties	1	2	3	4	5
5. I reach a goal	1	2	3	4	5
6. I work hard	1	2	3	4	5
7. I show other people I am the best	1	2	3	4	5
8. I am the best	1	2	3	4	5
9. I am clearly superior	1	2	3	4	5
10. I outperform my opponents	1	2	3	4	5
11. I beat other people	1	2	3	4	5
12. I win	1	2	3	4	5

5.5.6 Athletic identity

Q#. The following statements relate to your personal self-perceptions about being an athlete and playing your chosen sport. Please rate the extent to which you agree or disagree with each statement below based on how you would currently describe yourself.

	Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
1. My primary reason for competing in my sport is receiving awards and recognition	1	2	3	4	5
2. Being an athlete is an important part of who I am	1	2	3	4	5
3. I often fear people will not like me as much if I do not compete well	1	2	3	4	5
4. I obtain personal satisfaction from participating in athletics	1	2	3	4	5
5. My popularity with others is related to my athletic ability	1	2	3	4	5
6. I would feel a great sense of loss if I suddenly were unable to participate in sport	1	2	3	4	5
7. I only participate in sports because I am good at them	1	2	3	4	5
8. It is very important for me to succeed at my sport	1	2	3	4	5

	Strongly disagree	Disagree	Neither disagree or agree	Agree	Strongly agree
9. I fear not receiving the recognition and attention I get from being an athlete when I retire	1	2	3	4	5
10. Sport helps me express my emotions and feelings	1	2	3	4	5

5.5.7 Sportspersonship

Q#. For each of the following statements, circle the number that best represents the extent to which the item corresponds to you with respect to the main sport you currently compete in.

	Doesn't correspond to me at all	Corresponds to me a little	Corresponds to me partly	Corresponds to me a lot	Corresponds to me exactly
1. When I lose, I congratulate the opponent whoever he or she is.	1	2	3	4	5
2. I obey the referee.	1	2	3	4	5
3. In competition, I go all out even if I'm almost sure to lose.	1	2	3	4	5
4. I help the opponent get up after a fall.	1	2	3	4	5
5. I compete for personal honors, trophies, and medals	1	2	3	4	5
6. After a defeat, I shake hands with the opponents' coach	1	2	3	4	5
7. I respect the rules.	1	2	3	4	5
8. I don't give up even after making many mistakes	1	2	3	4	5
9. If I can, I ask the referee to allow the opponent who has been unjustly disqualified to keep on playing	1	2	3	4	5
10. I criticize what the coach makes me do	1	2	3	4	5
11. After a competition, I congratulate the opponent for his or her good performance	1	2	3	4	5
12. I really obey all rules of my sport	1	2	3	4	5
13. I think about ways to improve my weaknesses	1	2	3	4	5
14. When an opponent gets hurt, I ask the referee to stop the game so that he or she can get help	1	2	3	4	5
15. After a competition, I use excuses for a bad performance	1	2	3	4	5
16. After a win, I acknowledge the opponent's good work	1	2	3	4	5

	Doesn't correspond to me at all	Corresponds to me a little	Corresponds to me partly	Corresponds to me a lot	Corresponds to me exactly
17. I respect the referee even when he or she is not good	1	2	3	4	5
18. It is important to me to be present at all practices	1	2	3	4	5
19. If I see that the opponent is unjustly penalized, I try to rectify the situation	1	2	3	4	5
20. When my coach points out my mistakes after a competition, I refuse to admit that I made those mistakes	1	2	3	4	5
21. Win or lose, I shake hands with the opponent after the game	1	2	3	4	5
22. I respect an official's decision even if he or she is not the referee	1	2	3	4	5
23. During practices, I go all out	1	2	3	4	5
24. If by misfortune an opponent forgets his or her equipment, I lend him my spare	1	2	3	4	5
25. If I make a mistake during a critical time of the match, I get angry	1	2	3	4	5

5.5.8 Sport perfectionism

Q#. A number of statements describing thoughts that players might have about competitive sport are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number.

	Strongly disagree			Neutral			Strongly agree
1. If I do not set the highest standards for myself in my sport, I am likely to end up a second-rate player	1	2	3	4	5	6	7
2. I hate being less than the best at things in my sport	1	2	3	4	5	6	7
3. It is important to me that I be thoroughly competent in everything I do in my sport	1	2	3	4	5	6	7
4. I think I expect higher performance and greater results in my daily sport-training than most players	1	2	3	4	5	6	7
5. I feel that other players generally accept lower standards for themselves in sport than I do	1	2	3	4	5	6	7
6. I have extremely high goals for myself in my sport	1	2	3	4	5	6	7
7. I set higher achievement goals than most athletes who play my sport	1	2	3	4	5	6	7
8. If I fail in competition, I feel like a failure as a person	1	2	3	4	5	6	7
9. The fewer mistakes I make in competition, the more people will like me	1	2	3	4	5	6	7

	Strongly disagree			Neutral			Strongly agree
10. I should be upset if I make a mistake in competition	1	2	3	4	5	6	7
11. If a team-mate or opponent (who plays a similar position to me) plays better than me during competition, then I feel like I failed to some degree	1	2	3	4	5	6	7
12. If I do not do well all the time in competition, I feel that people will not respect me as an athlete	1	2	3	4	5	6	7
13. People will probably think less of me if I make mistakes in competition	1	2	3	4	5	6	7
14. If I play well but only make one obvious mistake in the entire game, I still feel disappointed with my performance	1	2	3	4	5	6	7
15. Even if I fail slightly in competition, for me, it is as bad as being a complete failure	1	2	3	4	5	6	7
16. I feel like my coach criticizes me for doing things less than perfectly in competition	1	2	3	4	5	6	7
17. Only outstanding performance in competition is good enough for my coach	1	2	3	4	5	6	7
18. I feel like I can never quite live up to my coach's standards	1	2	3	4	5	6	7
19. My coach sets very high standards for me in competition	1	2	3	4	5	6	7
20. My coach expects excellence from me at all times: both in training and competition	1	2	3	4	5	6	7
21. I feel like my coach never tries to fully understand the mistakes I sometimes make	1	2	3	4	5	6	7
22. My parents set very high standards for me in my sport	1	2	3	4	5	6	7
23. In competition, I never feel like I can quite meet my parents' expectations	1	2	3	4	5	6	7
24. Only outstanding performance during competition is good enough in my family	1	2	3	4	5	6	7
25. My parents have always had higher expectations for my future in sport than I have	1	2	3	4	5	6	7
26. I feel like I am criticized by my parents for doing things less than perfectly in competition	1	2	3	4	5	6	7
27. In competition, I never feel like I can quite live up to my parents' standards	1	2	3	4	5	6	7
28. My parents expect excellence from me in my sport	1	2	3	4	5	6	7
29. I feel like my parents never try to fully understand the mistakes I make in competition	1	2	3	4	5	6	7
30. My parents want me to be better than all other players who play my sport	1	2	3	4	5	6	7

5.5.9 Fear of failure

Q#. Failing is a natural part of athletic pursuits. The following statements capture the different ways in which athletes might respond to or interpret failure. Please rate the extent to which you believe each of the following statements based on how you would currently describe yourself.

	Do not believe at all				Believe 100% of the time
1. When I am failing, I am afraid that I might not have enough talent	1	2	3	4	5
2. When I am failing, it upsets my "plan" for the future	1	2	3	4	5
3. When I am not succeeding, people are less interested in me	1	2	3	4	5
4. When I am failing, important others are disappointed	1	2	3	4	5
5. When I am failing, I worry about what others think about me	1	2	3	4	5

5.6 Beliefs about Reference Groups' Endorsement of Doping Methods/Substances

Q#. If you decided to use a banned performance enhancing substance, to what extent do you think each of the following people would approve or disapprove, or would not care either way if you did that?

	Would Definitely approve	Would probably approve	Wouldn't care either way	Probably disapprove	Definitely disapprove
1. Your coach	1	2	3	4	5
2. Parents	1	2	3	4	5
3. Team mates/training partners	1	2	3	4	5
4. Team doctor	1	2	3	4	5
5. Close friends	1	2	3	4	5
6. Trainer	1	2	3	4	5

Q#. If you were considering using a banned performance enhancing substance, how much would you take into account these people's opinions on whether you should or should not do so?

	Would definitely take into account	Would probably take into account	Wouldn't care either way	Probably not take into account	Definitely not take into account
1. Your coach	1	2	3	4	5
2. Parents	1	2	3	4	5
3. Team mates/training partners	1	2	3	4	5
4. Team doctor	1	2	3	4	5
5. Close friends	1	2	3	4	5
6. Trainer	1	2	3	4	5

5.7 Beliefs about the Availability of, and Relevant Authorities' Control Over Trafficking of Doping Methods/Substances

5.7.1 Availability of performance-enhancing substances

Q#. How easy or difficult would it be for you to get each of the following types of substances if you wanted to?

	Probably impossible	Very hard	Fairly hard	Fairly easy	Very easy	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

5.7.2 Access to banned performance enhancing substances from specific groups

Q#. If you wanted to get and use a banned performance-enhancing substance, which of the following people, if any, do you think would help you if you asked them to do so?

	Would definitely help me	Would probably help me	Might or might not help me	Probably would not help me	Definitely would not help me	Don't know
1. Your coach	1	2	3	4	5	9
2. Parents	1	2	3	4	5	9
3. Team mates/training partners	1	2	3	4	5	9
4. Team doctor	1	2	3	4	5	9
5. Sports psychologist	1	2	3	4	5	9
6. Trainer	1	2	3	4	5	9

5.7.3 Perceived access to medical advice on use of banned performance enhancing substances

Q#. If you wanted to use a banned performance-enhancing substance, how easy would it be to get good medical advice on how to use the substance?

Probably impossible 1
Very hard 2
Fairly hard 3
Fairly easy 4
Very easy 5
Don't know 9

5.7.4 Perceived efforts of relevant authorities in enforcing laws against trafficking of doping methods/substances

Q#. How serious do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (country)?

	Not at all serious	Not serious	A little serious	Quite serious	Very serious
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

Q#. Overall, how effective do you feel the following authorities are in preventing trafficking of banned performance enhancing substances in (country)?

	Not at all effective	Not effective	A little effective	Quite effective	Very effective
1. Police	1	2	3	4	5
2. Customs officers	1	2	3	4	5

5.8 Beliefs about the Affordability of Doping Methods/Substances

Q#. How expensive would it be for you personally to buy each of the following types of substances?

	Very cheap	Quite cheap	Neither	Quite expensive	Very expensive	Don't know
1. Anabolic steroids	1	2	3	4	5	9
2. Beta-blockers	1	2	3	4	5	9
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	9
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	9
5. Human growth hormones (hGH)	1	2	3	4	5	9
6. Diuretics	1	2	3	4	5	9

5.9 Beliefs about Other Athletes' Attitudes Towards and Use of Doping Methods/Substances

5.9.1 Descriptive norms

Q#. The following statements are intended to provide an insight into your beliefs regarding other athletes' use of doping.

Percentage (%)

1. Out of 100%, how many athletes in your sport do you believe engage in doping to enhance their performance ....._____
2. Out of 100%, how many elite athletes in your country do you believe engage in doping to enhance their performance?....._____
3. Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 2 years to enhance their performance? ....._____
4. Out of 100%, how many coaches in your sport do you believe would encourage their athletes to use doping to enhance their performance?....._____
5. Out of 100%, how many coaches in elite sports in your country do you believe would encourage their athletes to use doping to enhance their performance?....._____

5.9.2 Subjective norms

Q#. The following statements are intended to provide an insight into your beliefs about other people's opinions towards the athlete using doping.

	Strongly disagree			Neutral			Strongly agree
1. Most people I know would approve of me using prohibited substances to enhance my performance during this season.....	1	2	3	4	5	6	7
2. People who are important to me would approve of me using prohibited substances to enhance my performance during this season.....	1	2	3	4	5	6	7
3. Most people close to me expect me to use prohibited substances to enhance my performance during this season.....	1	2	3	4	5	6	7

5.10 Beliefs about Societal Influences on Doping

Q#. How much pressure, directly or indirectly, do you think the (country) government or the (country) Olympic Committee puts on elite athletes to win Olympic gold medals?

No pressure at all.....1
A little pressure 2
Moderate pressure.....3
A lot of pressure 4

Q#. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased a 'win at all costs' attitude amongst elite athletes?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

Q#. To what extent, if at all, do you think commercial influences on the Olympics and sport in general have increased the temptation amongst elite athletes to use banned performance enhancing substances?

Had no effect 1
Increased a little 2
Increased somewhat 3
Increased a lot 4

5.11 Performance-Enhancing Drug Use

Q#. Which one of the following most applies to you?

I have never considered using a banned performance-enhancing substance.....1
At one stage I thought briefly about using a banned performance-enhancing substance.....2
At one stage I thought quite a bit about using a banned performance-enhancing substance.....3
I still think occasionally about using a banned performance-enhancing substance
because other athletes are using them.....4
I briefly used a banned performance-enhancing substance in the past but no longer do so.....5
I occasionally use a banned performance-enhancing substance now for specific purposes.....6
I regularly try or use banned performance-enhancing substances.....7

Q#. In the last 12 months, how often have you used any of the following, for whatever reason?

	Have never used	Did not use in the last 12 months	1 to 2 times	3 to 5 times	6 to 10 times	More than 10 times
1. Anabolic steroids	1	2	3	4	5	6
2. Beta-blockers	1	2	3	4	5	6
3. Designer steroids like tetrahydrogestrinone (THG)	1	2	3	4	5	6
4. Erythropoietin (EPO) and other similar substances	1	2	3	4	5	6
5. Human growth hormones (hGH)	1	2	3	4	5	6
6. Diuretics	1	2	3	4	5	6
7. Doping methods	1	2	3	4	5	6
8. Alphabodies	1	2	3	4	5	6

Q#. Have you ever tested positive for a banned performance-enhancing substance?

Yes 1
No 2

5.12 Use of Nutritional Supplements and Other Permitted Technologies

5.12.1 Use of nutritional supplements

Q#. How often have you used any of these nutritional supplements in the past 12 months?

	Never	Rarely	Sometimes	Frequently	Very frequently	Systematically
1. Vitamin or mineral supplements	1	2	3	4	5	6
2. Herbal products	1	2	3	4	5	6
3. Creatine	1	2	3	4	5	6
4. Sports drinks	1	2	3	4	5	6
5. Energy bars	1	2	3	4	5	6
6. Caffeine	1	2	3	4	5	6
7. Protein-carbohydrate shakes	1	2	3	4	5	6

5.12.2 Therapeutic use exemptions

Q#. To what extent do you think that athletes who have been given Therapeutic Use Exemptions have been thoroughly evaluated and that their exemptions are justified?

None justified 1
Most not justified 2
Some are justified, others are not.....3
Most justified.....4
All justified.....5
Don't know 9

5.13 Demographics and Sporting Background

5.13.1 Sporting background

Q#. What is the main sport you are or have been involved in?

_____

Q#. How many years have you competed in your main sport?

Less than 1 year (or season 1
1 or 2 years (or seasons.....2
More than 2 but less than 5 years (or seasons.....3
5 or more years (or seasons 4

Q#. What is the highest level you have competed at?

Olympic games 1
World championship events/international events.....2
National competition.....3
State competition.....4
Regional competition 5
City/district competition 6

Q#. Do you hold or have you ever held titles?

Yes – National title.....1
Yes – International title 2
Yes – State title.....3
No 4

Q#. Have you ever had a Therapeutic Use Exemption?

Yes – and still have 1
Yes – but no longer.....2
No 3

Q#. Do you compete in events for athletes with a disability?

Yes.....1
No 2

5.13.2 Socio-demographic information

Q#. What is your age?

..... _____

Q#. Are you:

Male 1
Female 2

Q#. What is your highest level of education? (adapted to country)

Completed Year 9 or less 1
Completed Year 10 2
Completed Year 11 3
Completed Year 12 4
Some technical college 5
Some University 6
Currently enrolled in technical college 7
Currently enrolled in University 8
Completed technical college 9
Completed University 10

Q#. To what extent do you currently derive income from your participation in sport? Include here both direct payments and winnings as well as sponsorships, endorsements and scholarships.

No income at all from sport 1
Occasional income from sport 2
Regular income but less than half of total income 3
About half my income from sport 4
More than half from sport, but not all my income 5
All or almost all of my income from sport 6

Q#. What is your total annual income from all sources? (adapted to country)

Less than 10,000 1
10,000 to 19,999 2
20,000 to 29,999 3
30,000 to 49,999 4
50,000 to 69,999 5
70,000 to 99,999 6
100,000 or more 7

5.14 Overall Susceptibility to Doping; Intention to Dope in the Near Future; Overall Attitude to Doping

5.14.1 Susceptibility to performance-enhancing substances use:

Q#. If you were offered a banned performance enhancing substance under medical supervision at low or no financial cost and the banned performance enhancing substance could make a significant difference to your performance and was currently not detectable, how much consideration do you think you might give to this offer?

None at all.....1
A little consideration 2
Some consideration.....3
A lot of consideration 4

Q#. Given the pressures athletes are often under to win, how confident are you that you could refuse this offer?

Very confident could refuse 1
Quite confident could refuse.....2
Not very confident could refuse.....3
Not confident at all could refuse.....4
Wouldn't want to refuse 5

5.14.2 Intention to dope in the near future

Q#. Do you intend to use prohibited substances or methods to enhance your performance or gain a competitive edge against your opponents during this season?

Definitely not.	1
Probably not.	2
Might or might not	3
Probably will.	4
Definitely will	5

5.14.3 Attitudes to doping

(i) Overall attitude

Q#. The following statements are designed to help us gather information about athletes' thoughts on doping in sport. Please provide your rating by circling the appropriate response that best represents your position about these issues. Numbers "1" and "7" indicate a very strong position; and "4" indicates that you are undecided as to your position on that issue.

Using prohibited substances or methods to enhance my performance in the next 12 months would be ….

Bad idea.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Good idea

Of no use to me.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Very useful to me

Not beneficial.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Beneficial

Optional extras:

Unethical.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Ethical

Dangerous.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Safe

Unhealthy.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Healthy

Wrong.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Right

Unacceptable.....1. .....2. .....3. ..... 4..... 5..... 6. .....7 .....Acceptable

(ii) Necessity to engage in performance-enhancing substances use to perform at the highest levels

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Q#. In your sport, how necessary do you believe it is for athletes to use banned performance-enhancing substances at least at some time, to perform at the very highest levels?

Definitely have to use. 1
Probably have to use.....2
Might or might not have to use. 3
Probably don't have to use. 4
Definitely don't have to use.....5

APPENDIX 1: BIBLIOGRAPHY

Aquino, K., Freeman, D., Reed, A.I.I., Lim, V.K.G., & Felps, W. (2009). Testing a social cognitive model of moral behavior: The interaction of situational factors and moral identity centrality. *Journal of Personality and Social Psychology, 97,* 123-141.

Aquino, K., & Reed, A. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology, 83,* 1423-1440.

Bamberger, M., & Yaeger, D. (1997). Over the edge. *Sports Illustrated*, 86, 60-70.

Bandura, A. (1991). Social cognitive theory of moral thought and action. In W.M. Kurtines & J.L. Gewirtz (Eds.), *Handbook of moral behavior and development: Theory, research, and applications* (Vol. 1, pp. 71-129). Hillsdale, NJ: Erlbaum.

Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education, 31,* 101-119.

Barkoukis, V., Lazuras, L., & Tsorbatzoudis, H. (2014). Beliefs about the causes of success in sports and susceptibility for doping use in adolescent athletes. *Journal of Sports Sciences, 32,* 212-219.

Becker, M.H. (1974). The Health Belief Model and personal health behavior. *Health Education Monograph*, 2, 324-473.

Bies, R.J., & Moag, J.S. (1986). Interactional justice: communication criteria of fairness. In: RJ Lewicki, BH Sheppard & MH Bazerman (eds). *Research on Negotiation in Organisations*, volume 1, JAI Press, Greenwich, CT, pp. 43-55.

Brewer, B.W., Van Raalte, J.L., & Linder, D.E. (1993). Athletic identity: Hercules' muscles or Achilles' heel? *International Journal of Sport Psychology, 24,* 237-254.

Burke, P. (1991). Identity processes and social stress. *American Sociological Review, 56,* 836-849.

Cialdini, R.B, Reno, R.R., & Kallgren, C.A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015-1026.

Conroy, D.E. (2001). Fear of failure: An exemplar for social development research in sport. *Quest, 53,* 165-183.

Conroy, D.E., Willow, J.P., Metzler, J.N. (2002). Multidimensional fear of failure measurement: The Performance Failure Appraisal Inventory. *Journal of Applied Sport Psychology, 14,* 76-90.

Corbin, C.B., Feyrer-Melk, S.A., Phelps, C., & Lewis, L. (1994). Anabolic steroids: a study of high school athletes. *Pediatric Exercise Science*, 6, 149-158.

Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227-268.

Donovan, R.J., Egger, G., Kapernick, V., & Mendoza, J. (2002). A conceptual framework for achieving performance enhancing drug compliance in sport. *Sports Medicine, 32,* 269-284.

Donovan, R.J., Jalleh, G., & Gucciardi, D.F. (2009). *Psychological profile of at-risk athletes*. Scientific Report submitted to the Anti-Doping Research Program of the Department of Health and Ageing.

Donovan, R.J., Jalleh, G., & Gucciardi, D.F. (2014). *Using the Sport Drug Control Model to review the social science research on doping and identify areas for future research*. Report submitted to WADA Education Committee and Social Science Research Ad Hoc Sub-Committee.

Dunn, J.G.H., Causgrove-Dunn, J., Gotwals, J.K., Vallance, J.K.H., Craft, J.M., & Syrotuik, D.G. (2006). Establishing construct validity evidence for the sport multidimensional perfectionism scale. *Psychology of Sport and Exercise, 7,* 57-79.

Dunn, M., & White, V. (2011). The epidemiology of anabolic-androgenic steroid use among Australian secondary school students. *Journal of Science and Medicine in Sport, 14,* 10-14.

Elbe, A-M, Brand, R. (2014) The effect of an ethical decision making training on young athletes' attitudes towards doping. *Ethics & Behaviour*, DOI: 10.1080/10508422.2014.976864.

Gilliland, S.W. (1993). The perceived fairness of selection systems: an organisational justice perspective. *The Academy of Management Review*, 18, 694-734.

Gucciardi, D.F., Jalleh, G., & Donovan, R. (2011). An examination of the Sport Drug Control Model with elite Australian athletes. *Journal of Science and Medicine in Sport, 14,* 469-476.

Hodge, K., & Gucciardi, D.F. (in press). Antisocial and prosocial behavior in sport: The role of motivational climate, basic psychological needs, and moral disengagement. *Journal of Sport & Exercise Psychology.*

Hodge, K., Hargreaves, E., Gerrard, D., & Lonsdale, C. (2013). Psychological mechanisms underlying doping attitudes in sport: Motivation and moral disengagement. *Journal of Sport & Exercise Psychology, 35*, 419-432.

Jalleh, G., Donovan, R.J., & Jobling, I. (2014). Predicting attitude towards performance enhancing substance use: A comprehensive test of the Sport Drug Control Model with elite Australian athletes. *Journal of Science and Medicine in Sport*, *17(6),* 574-579.

Lee, M.J., Whitehead, J., & Ntoumanis, N. (2007). Development of the Attitudes to Moral Decision-making Youth Sport Questionnaire (AMDYSQ). *Psychology of Sport and Exercise, 8,* 369-392.

Lonsdale, C., Hodge, K., & Rose, E.A. (2008). The Behavioral Regulation in Sport Questionnaire (BRSQ): Instrument development and initial validity evidence. *Journal of Sport& Exercise Psychology, 30,* 323-355.

Lucidi, F., Zelli, A., Mallia, L., Grano, C., Russo, P.M., & Violani, C. (2008). The social-cognitive mechanisms regulating adolescents' use of doping substances. *Journal of Sports Sciences, 26,* 447-456.

McGowan, E., Prapavessis, H., & Wesch, N. (2008). Self-presentational concerns and competitive anxiety. *Journal of Sport& Exercise Psychology, 30,* 383-400.

Nasco, S.A., & Webb, W.M. (2006). Toward an expanded measure of athletic identity: The inclusion of public and private dimensions. *Journal of Sport and Exercise Psychology, 28,* 434-453.

Nicholls, J.G. (1989). *The competitive ethos and democratic education.* Cambridge, MA: Harvard University Press.

Ntoumanis, N., Ng, J.Y.Y., Barkoukis, V., & Backhouse, S. (2014). Personal and psychosocial predictors of doping use in physical activity settings: A meta-analysis. *Sports Medicine, 44,* 1603-1624.

Roberts, G.C., Treasure, D.C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences, 16,* 337-347.

Rosenstock, I.M. (1977). What research in motivation suggests for public health. *American Journal of Public Health*, 50, 295-302.

Stoeber, J. (2011). The dual nature of perfectionism in sports: Relationships with emotion, motivation, and performance. *International Review of Sport and Exercise Psychology, 4,* 128-145.

Tyler, T.R. (1990). *Why people obey the law*. Yale University Press, New Haven.

Vallerand, R.J., Briere, N.M., Blanchard, C., & Provencher, P. (1997). Development and validation of the multidimensional sportspersonship orientations scale. *Journal of Sport & Exercise Psychology, 19,* 197-206.

Wilson, P., & Eklund, R.C. (1998). The relationship between competitive anxiety and self-presentational concerns. *Journal of Sport and Exercise Psychology, 20,* 81-97.

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