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Athletes' Beliefs about and Attitudes Towards Taking Banned Performance-Enhancing
Substances: A Qualitative Study

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1 **Abstract**

2 Elite athletes' beliefs about, and attitudes toward, taking banned performance-enhancing
3 substances were explored in eight focus-group discussions with 57 athletes from seven
4 different sports. Discussion was initiated by three broad open-ended questions pertaining to
5 three important themes likely to affect beliefs and attitudes toward banned performance-
6 enhancing substances. Thematic content analysis of interview transcripts revealed nine lower-
7 order themes emerging under the three global themes: *personal attitudes (reputation and*
8 *getting caught, health effects, financial incentives and rewards); social influences (coaches,*
9 *parents, medical staff and sport scientists); and control beliefs (i.e., insufficiency of doping*
10 *testing, resource availability, and sport level and type)*. Findings provide insight into the
11 beliefs and attitudes that likely underpin motives and intentions to take banned performance-
12 enhancing substances. Results are generally consistent with, and complement, research
13 adopting quantitative approaches based on social-cognitive models examining the beliefs and
14 attitudes linked to taking banned performance-enhancing substances.

15

16 **Keywords:** Doping, anti-doping, performance-enhancing drugs, focus group, qualitative
17 research

1 Athletes' Beliefs about and Attitudes towards Taking Banned Performance-Enhancing
2 Substances in Athletes

3 Evidence suggests that despite comprehensive and ongoing deterrence and detection
4 efforts by anti-doping agencies (e.g., World Anti-Doping Agency; WADA), the use of banned
5 performance-enhancing substances among elite athletes remains pervasive in many sport
6 disciplines (Alaranta et al., 2006; Backhouse, McKenna, Robinson, & Atkin, 2009; Laure &
7 Binsinger, 2007). In addition to the moral and ethical issues arising from transgression of
8 anti-doping legislation, long-term use of many banned performance-enhancing substances
9 confer serious side effects deleterious to the health of athletes (Lentillon-Kaestner, Hagger, &
10 Hardcastle, 2012; Pipe & Ayotte, 2002). Regulating bodies have largely focused on
11 legislation and drug-testing programs to regulate athletes' use of banned substances, but
12 recent attention has been directed toward prevention through education (Strelan &
13 Boeckmann, 2006). Organizations such as WADA have therefore sought to intervene in the
14 early stages of athletes' careers, recognizing that young elite athletes represent a group that
15 are likely to be particularly vulnerable to the uptake of banned performance-enhancing
16 substances in sport (World Anti-Doping Agency, 2009).

17 Such initiatives are informed by research that has demonstrated that athletes in late
18 adolescence, and even younger, have used, or intend to use, banned performance-enhancing
19 substances (Laure & Binsinger, 2007). However, the majority of these research findings were
20 derived from theory-driven quantitative studies wherein the breadth and depth of knowledge
21 about the salient psychological factors related to intended and actual use of banned
22 performance-enhancing substances in elite athletes may be restricted. Research adopting an
23 athlete-driven qualitative approach to examine athletes' beliefs about doping and anti-doping
24 behaviors may provide greater insight into the psychological processes underpinning
25 intentions to use banned performance-enhancing substances. Such qualitative knowledge is
26 considered important to inform the development of evidence-based educational interventions
27 that will be effective in preventing doping behavior in elite athletes. The present investigation

1 aimed to explore beliefs surrounding intentions and motivation to use banned performance-
2 enhancing substances in elite athletes using a qualitative thematic content analysis.

3 **Attitudes and Beliefs Toward Doping in Sport**

4 According to previous research, personal attitudes, social influence, and control beliefs
5 are central to the intentions and behaviors associated with doping (Lucidi et al., 2008;
6 Petroczi, 2007; Wiefferink, Detmar, Coumans, Vogels, & Paulussen, 2008). Research
7 focusing on athletes' attitudes towards doping revealed that athletes may hold both positive
8 (e.g., enhanced physical performance, increase the chance of winning, and ability to cope with
9 extreme pressure or demand to perform well) and negative (e.g., side effects, risks or
10 consequences of getting caught, morality) beliefs about the consequences of using banned
11 performance-enhancing substances (Hoff, 2012; Lentillon-Kaestner et al., 2012; Petroczi,
12 2007).

13 Social factors have been shown to have an impact on athletes' decisions to use banned
14 performance-enhancing substances. It has been proposed that significant others, such as
15 teammates, peers, and high-profile athletes, are potential influencers of using illegal
16 performance-enhancing drugs in sport (Donovan, Egger, Kapernick, & Mendoza, 2002;
17 Strelan & Boeckmann, 2006). In addition, a number of correlational studies based on the
18 theory of planned behavior (Ajzen, 1985) revealed that the perceived social appropriateness
19 of doping in the sporting environment was significantly related to the behavioral intention
20 (Allahverdipour, Jalilian, & Shaghaghi, 2012; Wiefferink et al., 2008; Zelli, Mallia, & Lucidi,
21 2010). Such findings are consistent with those from a recent qualitative investigation among
22 elite cyclists which found that significant others in sport (e.g., coaches, teammates, team
23 doctor, manager) influence elite athletes' intentions and motivation to take banned
24 performance-enhancing substances (Lentillon-Kaestner & Carstairs, 2010).

25 Research into athletes' perceived control (i.e., the degree to which the behavior is
26 considered as being possible) over taking banned performance-enhancing substances in elite
27 sport has received relatively less attention in comparison to personal attitudes and social
28 influences. However, its potential importance is highlighted by social psychological models

1 of motivation and behavior (e.g., Ajzen, 1991; Bandura, 1977; Hodge, Hargreaves, Gerrard,
2 & Lonsdale, 2013) as well as empirical literature on the situational factors that facilitate or
3 inhibit the use of banned performance-enhancing substances. For example, the sport drug-
4 control model documents that the availability and affordability of banned performance-
5 enhancing substances exert a direct influence on athletes' doping actions (Donovan et al.,
6 2002; Gucciardi, Jalleh, & Donovan, 2011; Mazanov, Huybers, & Connor, 2011). It is also
7 suggested that athletes' knowledge or resources to access correct information (e.g., education)
8 of banned performance-enhancing substances are essential for athletes to avoid unintentional
9 uptake of illegal substances (Backhouse et al., 2009; Lamont-Mills & Christensen, 2008).
10 Finally, the perceptions of the resources or obstacles of accessing the performance-enhancing
11 drugs might also have an important role on doping behavior (Allahverdipour et al., 2012;
12 Wiefferink et al., 2008; Zelli et al., 2010). The difficulty or accessibility of doping could be
13 very different between sport events or athletes of different skill levels (Alaranta et al., 2006),
14 so qualitatively examining athletes' control beliefs of doping would be particularly useful for
15 researchers to identify the athletes in certain sport events who were more vulnerable to the
16 temptation of taking banned performance-enhancing substances in sport.

17 Much of the research on athletes' attitudes towards and beliefs about doping has
18 primarily been based on quantitative investigations (e.g., Brand, Melzer, & Hagemann, 2011;
19 Lotz & Hagemann, 2007; Petroczi & Aidman, 2009) in which the assessment of attitudes was
20 developed on the basis of previous literature and using specific algorithms for developing
21 questionnaire items developed top-down by the researchers (French & Hankins, 2003).
22 Quantitative research endorses a deductive approach where the involvement of theory-
23 building and inductive research are relatively minor, so an approach that is grounded in, and
24 emerging from, the actual experiences of athletes may yield additional if not greater insight
25 into the belief systems that underpin athletes' motivation and intentions to take banned
26 performance-enhancing substances. A qualitative approach (e.g., using focus groups and
27 interviews) could be useful in increasing the comprehensiveness and breadth of the
28 conceptualization and operationalization of psychological constructs (Hagger &

1 Chatzisarantis, 2011), particularly in the context of using banned performance-enhancing
2 substances in sport (Bloodworth & McNamee, 2010; Mazanov & Huybers, 2010). In their
3 qualitative study, Masanov and Huybers (2010) highlighted four themes that appear to
4 influence decisions concerning the use of performance-enhancing substances. The first theme
5 was the *objective use of performance-enhancing substances* (i.e., the desire to achieve an
6 outcome, aspirations or dreams). The second theme concerned *information about*
7 *performance-enhancing substances* (i.e., information athletes use to help make their decision
8 including the source of information). The third theme was *the deterrence system* (i.e., the
9 likelihood of being caught or of banned substances being detected). The fourth theme
10 surrounded the *consequences if prosecuted* (i.e., the broader consequences such as public
11 humiliation and shaming). The findings by Mazanov and Huybers (2010) provide a useful
12 framework of some of the factors known to influence athlete decisions to use performance-
13 enhancing substances.

14 The purpose of the present investigation was to examine the content and organization
15 of elite athletes' salient beliefs with respect to banned performance-enhancing substances
16 using a qualitative approach and thematic content analysis. We focused on elite and
17 experienced sub-elite athletes because this is a group that has been identified as a priority for
18 educational interventions to prevent initial use of banned performance-enhancing substances
19 and prevent entry into career-long use of banned performance-enhancing substances (Martin,
20 Baron, & Gold, 2006; World Anti-Doping Agency, 2009). Given that the use of banned
21 performance-enhancing substances is more prevalent in some sports relative to others (Laure
22 & Binsinger, 2007; Lentillon-Kaestner, Hagger, & Hardcastle, 2011), we included athletes
23 from a number of individual and team sports.

24

25

Materials and Methods

Participants and Procedures

27 Participants were elite (state and international) and experienced sub-elite (club and
28 league) level athletes aged between 16 and 25 from a variety of individual and team sports

1 with at least four years of experience with their sport. Using a stratified purposive sampling
2 strategy, we recruited volunteer participants through contact with coaches and support staff of
3 teams from a number of sports affiliated with, or linked to, the Western Australia Institute of
4 Sport. A total of eight teams (total N = 57) from seven different sports (track and field,
5 basketball, field hockey, netball, water polo, and swimming) whose athletes satisfied our
6 inclusion criteria in terms of age and sport experience agreed to participate in the study. We
7 conducted a focus group discussion with athletes from each of the eight teams. That is,
8 participants in each group were from the same team, making it a more familiar and facilitative
9 environment for the participants to comfortably discuss key beliefs regarding banned
10 performance-enhancing substances relevant to their specific sporting environment. Ethical
11 approval was obtained from Curtin University prior to data collection. Participants and their
12 parents or guardians signed consent forms to confirm that they were fully informed about the
13 purpose of the study and understood their participation rights (e.g., voluntary participation,
14 right of withdrawal, and confidentiality of the data). Before conducting the focus group,
15 participants were asked to complete a demographic questionnaire to ascertain age, gender, and
16 sport type, level, experience in sport, and any history of using banned performance-enhancing
17 substances (please see Table 1 for the characteristics of the participants in each focus group).
18 Only two participants in our study reported that they had used prohibited substances listed by
19 WADA.

20 **Interview Schedule**

21 A discussion topic guide was developed using three sources of information: (1) existing
22 literature on the psychological and environmental factors that have been associated with
23 motivation and intentions to take banned performance-enhancing substances in sport
24 (Allahverdipour et al., 2012; Backhouse et al., 2009; Donovan et al., 2002; Lentillon-Kaestner
25 & Carstairs, 2010; Lentillon-Kaestner et al., 2012); (2) consensus among the investigator
26 team on the current project who have considerable experience in the identification of the
27 factors associated with banned performance-enhancing substances in sport; and (3) constructs
28 within the social-cognitive models that have typically been adopted in studies examining the

1 factors linked to taking banned performance-enhancing substances in athletes (Barkoukis,
2 Lazuras, Tsorbatzoudis, & Rodafinos, 2011; Donahue et al., 2006; Lucidi et al., 2008;
3 Petroczi & Aidman, 2009; Zelli et al., 2010). The information was used to develop an initial
4 comprehensive schedule comprising questions for each of the perceptions and beliefs
5 identified in the research and the psychological constructs. The schedule was then reduced
6 using content analysis to eliminate redundancy. Finally, three primary questions were
7 developed for the interview in order to reveal athletes' personal attitudes (i.e., "What, if
8 anything, do you believe are the advantages/ disadvantages of using banned performance-
9 enhancing substances/ doping methods in sport?"), social influence (i.e., "Are there any
10 individuals or groups who would approve/ disapprove of you using banned performance-
11 enhancing substances/ doping methods in sport? And why?"), and perceived barriers and
12 facilitators (i.e., "What factors or circumstances would make it easy or difficult for you to use
13 banned performance-enhancing substances/ doping methods in sport?") toward the use of
14 banned performance-enhancing substances in sport.

15 **Focus Group Interviews**

16 The focus group interviews were chosen over one-to-one interviews because they could
17 offer an open platform for the athletes to freely discuss their views towards the use of banned
18 performance-enhancing substances in sport amongst their teammates. The focus group
19 environment would facilitate an interactional dynamic which may bring about more open
20 discussion and elaboration of sensitive issues like doping (Bloodworth & McNamee, 2010;
21 Kidd & Parshall, 2000). Although we made concerted efforts to be directive in questioning
22 less forthcoming participants, we recognize that a limitation of focus groups is the occasional
23 dominance of the discussion by a few participants. We aimed to achieve multivocality and a
24 cursory overview of the transcripts demonstrates this in that, for each question raised, several
25 athletes responded with comments and participants appeared to be talking comfortably and
26 freely and discussing their attitudes and beliefs with one another. The anonymized
27 transcripts are available on request. The focus-group interviews lasted between 40 to 50
28 minutes and were facilitated by a researcher, the first author, using the previously-developed

1 question schedule to guide the discussions with additional probing questions, where
2 necessary, to keep the discussions on track. Prior to the commencement of the interviews,
3 participants were reassured that their identities and sensitive information would not be
4 disclosed and they could articulate hypothetically about their intentions, feelings and beliefs
5 about doping even if they did not use banned performance-enhancing substances or doping
6 methods. At the beginning of the interview, participants were given a summary of the
7 prohibited substances and doping methods in sport according to the 2012 World Anti-Doping
8 Code (World Anti-Doping Agency, 2011). The code was used as a means to stimulate
9 discussion and used as reference during the interviews. The researcher also raised questions
10 about participants' experience and knowledge of banned performance-enhancing substances,
11 doping methods, and doping tests in their sport before commencing with the main interview
12 schedule. In order to facilitate group interactions and the depth of discussion, the researcher
13 encouraged participants to discuss issues freely with other interviewees in the focus group and
14 to prompt additional comments, elaboration, or clarification of their responses. The interview
15 was audiotaped with the consent of the participants and transcribed verbatim.

16 **Analysis**

17 Transcripts of the focus group interviews were analyzed using thematic content analysis
18 (Neuendorf, 2001) based on a typological approach (Goetz & LeCompte, 1981). This
19 integrated approach not only enables new themes to emerge from the data, but also allows
20 data to be analyzed in relation to previous research and theoretical constructs (Bradley, Curry,
21 & Devers, 2007; Braun & Clarke, 2006). The analysis focused on three major themes
22 identified in the social-cognitive models (Ajzen, 1985, 1991; Ajzen & Fishbein, 1980; French
23 & Hankins, 2003): personal attitudes, the social influence, and control belief towards doping.
24 The principle researcher (i.e., first author) read the transcript several times to identify the
25 themes emerged directly from the data that might link to athletes' beliefs towards doping.
26 Within each major theme, an inductive analysis was used to determine emergent lower-order
27 themes. Data was classified in corresponding lower-order themes. The quotes representative
28 of the emergent lower-order themes from the inductive coding were combined or assigned

1 deductively into higher order themes that could be related to the social cognitive models
2 (Ajzen, 1985, 1991; Ajzen & Fishbein, 1980; French & Hankins, 2003) and the associated
3 findings about doping in sport (Hodge et al., 2013; Lucidi et al., 2008; Petroczi & Aidman,
4 2009; Wiefferink et al., 2008; Zelli et al., 2010). Next, the categories were compared and
5 related to each other and summarized in overarching themes across all of the interviews,
6 emphasizing similarities and differences among the eight interviews. The interviews were re-
7 read to refine and verify the overarching themes. A second researcher (i.e., the second author)
8 experienced in qualitative data analysis served as a second reader of the transcripts and
9 offered further insight and interpretations of the emerging themes. The independent analysis
10 of data by two researchers was not used to ensure ‘reliability’ or ‘validity’ of data analysis but
11 merely to offer further interpretations and play the role of devil’s advocate in the
12 identification of themes.

13 **Markers of Quality**

14 In relation to quality in interpretive research, there are competing claims regarding what
15 counts as good-quality work. Sparkes and Smith (2009) provide a good overview of these
16 competing claims and the issue of criteria often used to judge quality in qualitative work and
17 how criteria have been developed over time to better match the interpretive paradigm. It is
18 beyond the scope of this paper to focus in detail on such criteria (for a full review readers
19 should refer to Sparkes & Smith, 2013). However, for the purposes of the current study we
20 have attempted to demonstrate quality by meeting the criteria for quality outlined by Tracy
21 (2010). She proposed eight markers of quality in qualitative research: worthy topic, rigour,
22 sincerity, credibility, resonance, contribution, ethical, and meaningful coherence. Given the
23 recent media coverage of high-level doping scandals, research exploring the beliefs and
24 attitudes towards doping in young athletes is both relevant and timely. Also, organizations
25 such as WADA are committed to the development of anti-doping interventions (World Anti-
26 Doping Agency, 2009) and, therefore, research identifying the key factors that influence
27 doping decision-making processes is significant and worthwhile. We aimed to maximize the
28 quality of our data and interpretation by collecting data from a variety of contexts (different

1 sports) and by using a systematic approach to analysis including multiple interpretations of
2 the data. We have attempted to demonstrate credibility through the use of thick description
3 and multivocality to allow readers' judgement of our interpretations. The study aims to
4 achieve resonance through evocative representation of athletes' attitudes and perceptions and
5 the potential for transferability of findings. Finally, coherence was achieved by meaningfully
6 interconnecting literatures, research questions and findings and interpretations with each
7 other.

8 **Results**

9 The results of the thematic content analysis revealed nine emergent themes derived
10 from the coding of the data that were subsumed under three higher-order themes
11 introduced into the groups: *personal attitudes*, *social influences*, and *control beliefs*. The
12 next sections describe the nine emergent themes and their content under the sub-headed
13 sections of the higher-order themes. The frequency count of the quotes associated with the
14 themes is displayed in Table 2.

15 **Personal Attitudes**

16 Participants described their feelings and beliefs about doping when they were asked
17 to express their personal evaluation toward the use of banned performance-enhancing
18 substances and doping methods. These beliefs were consolidated in three themes,
19 including (1) *reputation and getting caught*, (2) *health effects*, and (3) *financial incentives*
20 *and rewards*.

21 **Reputation and Getting Caught.** The main concern of athletes when asked about
22 the disadvantages of taking banned performance-enhancing substances was the potential
23 harm to their reputation (e.g., male track athlete (subject identifier¹ (SI) = 3): “[if you take
24 banned performance-enhancing substances] your reputation will be gone, and you will
25 have nothing afterwards”) and social images (e.g., male water polo player (SI = 43): “it
26 [using banned performance-enhancing substances] will destroy your image as well”)
27 associated with doping in sport. Similarly, when the moderator asked the athletes to
28 elaborate into details about the consequences of doping, they described getting caught by

1 doping authorities as the main disadvantage or barrier to taking banned performance-
2 enhancing substances (e.g., male basketball player (SI = 12): “But it [using banned
3 performance-enhancing substances] still kind of like scares me, [I’m] afraid of being
4 caught”; female field hockey player (SI = 20): “I definitely would say it’s hard to get
5 away with it”; female netball player (SI = 30): “You would get caught and banned”; male
6 field athlete (SI = 6): “They keep your blood sample for 10 years, and keep testing it. So,
7 if there is one person saying that you never get caught, I wouldn’t believe it”). However,
8 some participants also mentioned moral reasons for the opposition of doping, although
9 they were in the minority (e.g., female water polo player (SI = 56): “it’s completely
10 against what sport is all about”; male swimmer (SI = 37): “The moral side of it, it’s like
11 cheating”; female field hockey player (SI = 18): “[If you use banned performance-
12 enhancing substances and win] it’s like a fake performance, isn’t it?”; male field athlete (SI
13 = 8): “You know that you can achieve something without anything illegal.”).

14 **Health Effects.** The positive and negative physical and psychological effects
15 associated with the use of banned performance-enhancing substances was a common
16 feature of the conversations of athletes when discussing banned performance-enhancing
17 substances in sport. The majority of participants held beliefs that using banned
18 performance-enhancing substances may enhance their own physical (e.g., faster recovery,
19 endurance) and psychological (e.g., confidence) qualities that would, in turn, lead to better
20 performance in sport (female field hockey player (SI = 19): “Generally, [banned
21 performance-enhancing substances make you] stronger, faster, quicker”; female netball
22 player (SI = 32): “They [banned performance-enhancing substances] help you to recover
23 quicker”; female track athlete (SI = 2): “that would give them the confidence in
24 themselves even though they are gaining a physical advantage that they take the drug”).
25 Comments on the negative health-related side effects of doping were less common. When
26 side effects were raised, they were usually in relation to future health problems (female
27 swimmer (SI = 39): “I assume that because they were banned, they should have all the
28 long term health side effects”; male track athlete (SI = 1): “She [the athlete who used

1 banned performance-enhancing substances] might have run 10.40s for 100m, but she died
2 at 36”) or reflected concerns regarding addiction and dependency (male water polo player
3 (SI = 51): “In my mind, it may become addictive”; female netball player (SI = 28): “You
4 almost think you’ll become dependent”; female field hockey player (SI = 21): “In the long
5 term, problems will not only be like physical, but also psychological”). It seems that
6 athletes are acutely aware of the effects of banned performance-enhancing substances on
7 their bodies, particularly aspects related to performance like increases in strength, speed,
8 power, and endurance, but few cited or even made reference to negative health effects.

9 **Financial Incentives and Rewards.** Financial incentives and rewards for using
10 banned performance-enhancing substances to gain an advantage in sport were regarded as
11 the circumstances that might motivate athletes to consider taking the substances (female
12 water polo player (SI = 53): “As soon as you start it off as your wages from your ability to
13 perform, you might [dope] ...looking at the advantages [from doping]”). Athletes
14 conceded that financial rewards could be a potential motivator to take performance-
15 enhancing drugs (male field athlete (SI = 10): “A lot of money (that could) set me up
16 outside sport, I’d probably consider it...it would have to be a lot of money though”; male
17 water polo player (SI = 45): “It’s like if there’s a soccer player and the sponsor said you
18 win 2 million dollars if you score a goal, all of a sudden you might start taking
19 performance-enhancing drugs... if I get 2 million I’ll just do it”). For some, it seems that
20 financial rewards in sport may supersede any beliefs regarding morality or health concerns
21 using banned performance-enhancing substances.

22 **Social Influence**

23 From participants’ conversations about the social agents or groups who might
24 approve or disapprove the use of banned performance-enhancing substances or doping
25 methods in sport, three significant social agents, *coaches*, *parents*, and *team doctors* were
26 frequently viewed as the significant others who could exert social pressure that influenced
27 athletes’ motivation and intentions to use banned performance-enhancing substances.

1 **Coaches.** It was widely accepted that coaches exerted a powerful influence on the
2 athletes and were held with particular reverence and esteem (female water polo player (SI
3 = 54): “You put your whole trust in your coach and you don’t ask questions”; female
4 water polo player (SI = 55): “The coach, you listen to him in everything”; male track
5 athlete (SI = 5): “If the coach tells me to do something, I probably like would have done
6 because I don't have any other opinion or any other who guided me”; female water polo
7 player (SI = 57): “Athletes are told not to have a brain...just do whatever the coaches tells
8 you”); female field hockey player (SI = 23): “I guess if you have a coach that focuses on
9 winning, and someone pushing you like win win win, then you feel like you can’t think
10 ‘am I going to be better?’ And I am going to go to do that [use banned performance-
11 enhancing substances])?”). However, in general, participants believed that their coaches
12 did not support doping (male field athlete (SI = 7): “I mean if you get to a high level, your
13 coach will be like your family, because you train with them all the time, if you let him
14 know that you dope, you are like cheating your family”; male water polo player (SI = 44):
15 “Like your coach who spent time trying to make you better, and that's all gone away [if
16 you doped].”; female water polo (SI = 52): “They [the coaches] help you improve, but
17 then if you just take performance enhancing drugs, you feel like you are letting them
18 down.”; male field athlete (SI = 6): “No matter how good you are, if you are taking
19 enhancing drugs, you just don't have the respect your friends and family, your coaches,
20 and the whole support staff.”). These findings indicate that the coach has a powerful
21 influence on athletes and it is a positive sign that coaches were generally perceived by
22 athletes to be against the use of banned performance-enhancing substances. However,
23 given the power and influence that coaches have, if a coach did endorse the use of using
24 banned performance-enhancing substances, there is potential for them to capitalize on that
25 trust to persuade athletes to take such substances.

26 **Parents.** Another powerful influence, in the views of the athletes, was that of parents
27 who might ‘push’ children into using banned performance-enhancing substances in order
28 to achieve (male swimmer (SI = 36): “When sometimes parents are very desperate for

1 them [their children] to win, then they might not discourage [the use of banned
2 performance-enhancing substances]”; female field hockey player (SI = 17): “Even like
3 parents, parents would do that, intense parents, who just want their kids to do well”; male
4 basketball player (SI = 15): “Maybe pressure or something from parents. Maybe that the
5 parents don't intentionally pressure them, but they put their life into you, hoping that in the
6 future, might put some pressure on you indirectly.”). However, the majority of the
7 participants thought that their own parents were not in favor of using banned
8 performance-enhancing substances in sport (e.g., female field hockey player (SI = 24):
9 “the whole family would be ashamed of you [if you use banned performance-enhancing
10 substances]”; female water polo (SI = 54): “Your family usually are having the same
11 values as you, so no one I know would give it a go.”; male basketball player (SI = 13): “I
12 never heard of any parents who encourage their children to take drugs.”). The general
13 perception was that in some cases parental pressures on winning might force some
14 athletes to consider taking banned performance-enhancing substances without their
15 parents' knowledge, but generally athletes believed that their parents to be strongly
16 against the use of such substances.

17 **Medical Staff and Sport Scientists.** Some athletes referred to the influence of team
18 doctors (male field athlete (SI = 10): “They don't pressure us but would just say we have
19 got it [banned performance-enhancing substances] here if you want to”. When the
20 moderator asked why the team doctors would like to do so, male field athlete (SI = 10)
21 continued: “I think that team doctors are employed to find banned substances, but at the
22 same time put a mask of agents to cover up”). Others identified the influence of people
23 from “sport science and medicine” might have in the systematic institutionalization of
24 using banned performance-enhancing substances in sport (male track athlete (SI = 4):
25 “People gain confidence because they come up with better ways to avoid being caught.
26 Like in a doping test, they are taking other people's urine samples...I heard on the news
27 that doctors are actually using catheters to insert other peoples' urine straight into the
28 bladder so that when you go to the toilet, someone else is doing the job”; female swimmer

1 (SI = 38): “You know some of that are made it up by doctors, so if the dose is within the
2 safe limit rather than a huge dose”). To some, team doctors and sports scientists were
3 viewed as being one step ahead of the anti-doping authorities and might help athletes deal
4 with their main fear of using banned performance-enhancing substances: getting caught.
5 In many cases team doctors were identified as a key gatekeeper regarding use of banned
6 performance-enhancing substances in sport (female netball player (SI = 31): “The team
7 doctor or something like that, they aware of what are banned, and what are not banned:
8 female netball player”). There is a clear awareness that people involved in the medical
9 side of the sport have the power and potential to be involved in administering banned
10 performance-enhancing substances, and there was the acknowledgement that they also
11 had the potential to circumvent any tests involved.

12 **Control Belief**

13 Certain factors or circumstances were identified by participants as making doping
14 more or less likely in their sport. Participants expressed their concerns about the
15 availability of the resources and the presence of obstacles that foster or impair the
16 intention to dope or avoid doping. These factors included *insufficiency of doping testing*,
17 *resource availability*, and *sport level and type*.

18 **Insufficiency of Doping Testing.** Athletes suggested that ‘doping science’ was
19 sufficiently advanced that there were ways to avoid being caught. In an overlapping
20 theme, athletes believed that provision for the testing for banned performance-enhancing
21 substances was insufficient. Most athletes had not experienced doping testing of any
22 kind and several raised the issue of insufficient checks and rigorous testing which might
23 lead some to feel that they could get away with using banned performance-enhancing
24 substances because they are unlikely to get caught (female netball player (SI = 29): “I
25 can’t remember all the races I’ve done, all the competitions I have done to ever have a
26 drug screen”; male water polo player (SI = 48): “He won 7 times and has just been
27 caught now...and all the riders who didn’t get caught, you can think about it, if the
28 chance of getting caught is that low there will be a motivation to do it”; male water polo

1 player (SI = 44): “In national games, you see the drug tester comes in...but they are just
2 taking it after the game, they can get away from the drug test and you see that all the
3 time”). Since one of the main barriers or disadvantages of taking banned performance-
4 enhancing substances cited by these athletes centered about harm to reputation and the
5 risk of getting caught, beliefs about the inadequacy of doping testing might provide a
6 clear indication of a lack of a major barrier to the use of banned performance-enhancing
7 substances in sport.

8 **Resource Availability.** Another theme arose from the personal and external
9 resources (i.e., accessibility and knowledge towards the banned substances) available to
10 athletes that might affect their use of banned performance-enhancing substances,
11 particularly accidental or incidental use while taking another nutritional supplement. This
12 included athletes’ personal awareness (male field athlete (SI = 7): “You got to be more
13 careful, even if you are just on the most ordinary supplement you can buy on the shops,
14 they might have got stuff in that, and you can get tested on a national level event”; male
15 water polo player (SI = 7): “we think we have to be a lot more careful, conscious about
16 what it's like, conscious about making a mistake, doing something that are going to (lead
17 me to) get caught in a drug test”), knowledge (female water polo player (SI = 57): “I feel
18 like you have to know because sometimes the substances are in, like Neurofen and Cold
19 and flu [remedies], and you would have no idea [if they contain banned performance-
20 enhancing substances]”; male water polo player (SI = 48): “It's really hard to find out
21 what's in there through the signs [the labels on the supplements]”), or information on
22 banned substances in sport (female water polo player (SI = 56): “When I go to the
23 chemists, I normally ask them, if, like banned substances in sport, they usually tell me that
24 they look after those stuff. They do”; female netball player (SI = 27): “We [the team] have
25 a doctor who we can call and tells us what [substances or drugs] we can take and what we
26 can't [according to the banned list]. It's quite accessible”). A crucial element of this theme
27 is the accessibility of banned performance-enhancing substances in sport (female netball

1 player (SI = 33): “We don't have people coming in saying that we have this [banned
2 performance-enhancing substances]”; female water polo player (SI = 53): “They are right
3 there, sitting in one of those supplement shops or on the supermarkets... These are just
4 illegal substance being placed on the shelf”; male basketball player (SI = 14): “If you are
5 paying for what it [banned performance-enhancing substances] costs, we can't really get
6 very much”). It seemed that athletes believed that better information and reduced
7 availability might assist in reducing accidental use of banned performance-enhancing
8 substances.

9 **Sport Level and Type.** For most athletes, the use of banned substances was
10 perceived to be less common among those who were involved in team sports and when
11 competitive levels were low. Team sport players often expressed that doping would not
12 give them significant advantages because their performance depended heavily on
13 teamwork and game tactics (male water polo player (SI = 49): “If you are doing
14 something like weightlifting, or other individual sport, mostly winning by physical
15 strength and endurance, there is a chance that performance enhancing drugs are going to
16 be the main things that are going to make a significant difference to the result. Whereas in
17 here, like in a team sport, or a sport that is kind of technical, that is not going to make a
18 significant difference”; female netball player (SI = 26): “I think that's different for
19 individual sport for substance use, in here you have got everyone else who don't, so...”).
20 There were also similar beliefs among athletes within individual sports (male field athlete
21 (SI = 8): “I think through the sport, through athletics, I think a lot of athletes are being
22 tested, dope before”; male swimmer (SI = 34): “I can't pretend. When I watch athletics,
23 sprinting, I always ignore [the fact] that people are on drugs”; female swimmer (SI = 42):
24 “Usually it's suspicious in cycling races”). In general, athletes from both team and
25 individual sports believed that doping was more likely when successful performance
26 heavily relied on power, strength, and endurance (e.g., athletics, weightlifting, cycling). In
27 addition to the type of sport, there appeared to be an acceptance that at higher levels of
28 performance, decisions not to dope could be more difficult due to pressure, wanting to

1 win and the financial incentives involved (male basketball player (SI = 11): “My
2 competitions are not that serious [to dope], so er...”; female water polo player (SI = 53):
3 “I don't think I am at the level to be [taking banned performance-enhancing substances]”;
4 male track athlete (SI = 1): “If you are in the middle of the pack and you take drug, and
5 this will get you to the top of the pack, that will be okay. If you are at the bottom, and you
6 move just to the middle [if you take drug], and you still lose. Is there any point?”). There
7 was a tacit acceptance that team sports were less prone to using of banned performance-
8 enhancing substances and some sports had more problems than others due, partly, to the
9 type of performance involved. There was a clear trend that at the highest level the pressure
10 and temptation to take banned performance-enhancing substances was very high, both in
11 terms of incentives.

12 **Discussion**

13 The present investigation aimed to identify the salient beliefs likely to enhance or
14 diminish athletes' motivation and intention to use banned performance-enhancing substances
15 in sport. Nine themes emerged from a qualitative thematic content analysis focus group
16 interviews of athletes from a number of team and individual sports, and these themes were
17 subsumed by three higher-order themes: personal attitudes, social influence, and control
18 beliefs. Although the themes were consistent with the global sets of beliefs identified in
19 quantitative studies adopting social psychological theories such as the theories of reasoned
20 action and planned behavior (Ajzen, 1985; Ajzen & Fishbein, 1980) that have been previously
21 applied to explain athletes intention and behavior of doping in sport (Allahverdipour et al.,
22 2012; Lucidi et al., 2008; Wiefferink et al., 2008), many of the beliefs and perceptions within
23 those themes deviated substantially from those identified in previous research. It is important
24 to note that previous theory-driven studies did not develop the sets of beliefs derived from in-
25 depth interviews with athletes and, if there was any athlete-driven input into the development
26 of their instruments, it was limited by the constraints of the approached in the individual
27 theory and failed to capture the breadth and complexity of beliefs likely to affect doping
28 behavior.

1 The present study, therefore, filled in the research gap by engaging in a comprehensive
2 and wide-ranging exploration for the contents of salient beliefs regarding the use of banned
3 performance-enhancing substances in sport. The value of the present research is that it
4 provides an athlete-driven, bottom-up, inductive approach to the derivation of the salient
5 beliefs rather than a purely researcher-imposed, deductive approach which likely focused on a
6 narrow set of constructs determined a priori by the theory or, at best, by the common practice
7 of open-ended belief elicitation rather than facilitative discussion (Hagger & Chatzisarantis,
8 2011). As a result, although the higher order themes aligned well with the social-cognitive
9 models in which attitude, subjective norm, and perceived behavioral control are regarded as
10 the key factors that directly and indirectly impact on intention and behavior (Ajzen, 1985;
11 Ajzen & Fishbein, 1980), the present study looked more closely and broadly at the specific
12 beliefs within the context of doping as documented in the lower-order themes. As the content
13 of these beliefs derived qualitatively from individuals' subjective feelings and attributions
14 about doping in sport, they might capture the essence of the beliefs that could inform
15 quantitative researchers for constructing psychometric measures of doping or anti-doping
16 beliefs, and the findings could also be useful to practitioners and educators interested in
17 promoting anti-doping. In the next section we elaborate on the key beliefs that emerged from
18 the analysis, under the higher-order themes from which the emergent themes were subsumed,
19 along with theoretical and practical implications of the findings.

20 **Personal Attitudes**

21 Our study demonstrated that athletes held mixed personal beliefs regarding the
22 consequences of doping, mainly in terms of the risk of getting caught and reputation,
23 performance enhancement, health side effects, and the potential rewards and incentives. This
24 may imply that athletes' personal appraisals about the pros and cons of using performance-
25 enhancing substances or doping methods are important for their decisions on doping in sport,
26 and is consistent with previous literature the benefit and risks of doping (Donovan et al.,
27 2002; Ehrnberg & Rosén, 2009; Gucciardi et al., 2011; Jalleh, Donovan, & Jobling, in press).

1 There are several sets of beliefs that are unique to the current research and have not
2 been captured previously. For example, although previous research has shown that the
3 improvement in physical ability is perceived as one of the key advantages of using banned
4 performance-enhancing substances (Hoff, 2012; Ninot, Connes, & Caillaud, 2006), our
5 findings indicate that athletes might perceive that using banned performance-enhancing
6 substances or doping methods in sport does not only bring forth physical advantages, but also
7 psychological gains. This is particularly true when some athletes would like to be
8 psychologically prepared to face a foreseeable challenge in training or competition, or to
9 relieve pain from sport injuries.

10 Interestingly, although participants reported some negative attitudes with respect to
11 the health-related side effects of doping, the perception of health risks associated with
12 doping were not often viewed to be as important as other factors such as the risk of getting
13 caught (Lentillon-Kaestner, 2011; Lentillon-Kaestner et al., 2012). This tendency to
14 dismiss or even be ignorant of the health effects has only recently been documented and is
15 of concern given the potential health risks associated with these substances (Lentillon-
16 Kaestner, 2013). Even when the health side effects were mentioned, participants were
17 unable to provide more details about what and how the side effects of doping would act
18 on the body. This might reflect the lack of working knowledge about the health-
19 compromising effects of banned performance enhancing substances. It could possibly be
20 due to the challenges in accessing and updating information about the medical or
21 biological aspects of prohibited substances and methods. The challenges could be
22 exacerbated by inconsistencies in the research evidence for the aversive health effects, and
23 reliability or trustworthiness, of the source of information (Kayser & Smith, 2008).
24 Indeed, our results explained why the most salient dimension within personal attitudes
25 appeared to be *reputation and getting caught*, showing that athletes who refused to take
26 banned performance-enhancing substances primarily because of the detrimental effects of
27 doping on their athletic careers (e.g., a bad name, a severe ban from sport, being kicked
28 off the team). The athlete perception of a low likelihood of being caught was also found

1 by Masanov and Huybers (2010) and may lead to willingness among athletes to risk using
2 performance-enhancing substances. The theme of ‘reputation’ and the detrimental
3 consequences of being caught was also echoed by Masanov and Huybers where
4 consequences such as public humiliation and being ostracized by peers were salient in
5 decision-making processes. These results suggest that anti-doping interventions may do
6 well to emphasize that the chances of getting caught are high and highlight the public
7 humiliation that would ensue.

8 Such patterns were relatively avoidant or controlling in nature, and could be problematic
9 because when the risks of these external negative contingencies of doping were effectively
10 reduced in some social circumstances (e.g., insufficient tests for banned performance-
11 enhancing substances, new undetectable doping methods), athletes’ intentions to take banned
12 performance-enhancing substances might be notably elevated (Bloodworth & McNamee,
13 2010). Recent research suggest that the use of banned performance-enhancing substances in
14 sport is associated with moral disengagement (Lucidi et al., 2008) and sport motives
15 (Barkoukis et al., 2011; Donahue et al., 2006), which supported our participants’ expressions
16 about how values and meaning of achievements in sport kept them away from considering
17 banned performance-enhancing substances. Hence educating athletes’ about fair play, ethical
18 conduct, and sportsmanship in sport might be important to anti-doping interventions.

19 **Social Influence**

20 Significant others’ approval and disapproval about use of banned performance-
21 enhancing substances in sport was a dominant theme. The coach was regarded as a significant
22 agent. Many participants felt that they might comply with the instructions of the coach even if
23 they were told to use banned performance-enhancing substances. This phenomenon is
24 consistent with previous literature about how coaches act as potential gatekeepers for the use
25 of banned performance-enhancing substances and anti-doping education in the sporting
26 contexts (Gucciardi et al., 2011; Lentillon-Kaestner & Carstairs, 2010). The present study
27 extends this by indicating that this is extremely important for elite and sub-elite athletes.

1 Parents were also viewed by the present sample as important social agents that may
2 contribute to the use of banned performance enhancing methods in athletes. Whilst parents
3 might not actually encourage or force their children to use banned performance-enhancing
4 substances, athletes' beliefs that their parents are desperate for them to succeed in sport may
5 compel them to do anything necessary to achieve this goal, and doping was clearly one option
6 that athletes might consider for increasing their chances of winning. A line of research
7 focusing on motivational climate may offer a feasible explanation for our findings. It has been
8 suggested that when significant others (e.g., parents, coaches) fostered a performance-oriented
9 climate - a social environment characterized by the emphasis of winning, social comparison,
10 and avoidance of failure, moral disengagement and cheating in sport were more likely (Detert,
11 Trevino, & Sweitzer, 2008; Sage & Kavussanu, 2007). This research proposes that significant
12 others should create a task-involving climate in which sport achievement is defined in terms
13 of improvement and self-referenced goals. Fostering a task-involved climate would counter-
14 act the moral disengagement and cheating that often associated with a performance-focused
15 environment (Petroczi & Aidman, 2008; White & Zellner, 1996). Considering doping is one
16 of the most common ways of cheating in sport, future research may look at the effects of
17 motivational climate, achievement goals, and coping on doping intention and behaviors
18 (Barkoukis et al., 2011).

19 Unique to the present study was the frequently-cited beliefs about the role of team
20 doctors and sports scientists in the administration of banned performance-enhancing
21 substances. Even though physicians are typically considered as being less important social
22 agents in sport in comparison to coaches and parents, they were perceived to have a unique
23 role on athletes regarding medical and health issues (e.g., sport injury; Chan & Hagger, 2012;
24 Chan, Hagger, & Spray, 2011). Several athletes believed that medical professionals have the
25 expertise to cover-up doping behaviors during tests for banned performance-enhancing
26 substances, and have the power to prescribe banned substances to avoid detection, thereby
27 counteracting the most prominent beliefs that prevent athletes from using such substances: the
28 fear of getting caught.

1 **Control Beliefs**

2 Many external factors were identified in the present study in relation to the general
3 circumstances that would make doping more easy or difficult. The accessibility and
4 knowledge of banned substances and doping methods, and the effectiveness of legislation
5 appeared to be significant to athletes' perception about the controllability of doping in sport.
6 These findings are consistent with Donovan's et al.'s sport drug model (Donovan et al., 2002;
7 Gucciardi et al., 2011) in which the appraisal of threat versus incentive of drug use in sport,
8 together with external factors (e.g., effectiveness of legislative enforcement and accuracy of
9 doping test, and the accessibility, affordability, and availability of banned substances), all
10 influence the likelihood of taking banned performance-enhancing substances.

11 Our results revealed that the knowledge about performance-enhancing method or
12 accessibility of information in relation to doping may, on the one hand, offer protection
13 against unintentional intake of banned substances. This is because the self-awareness and
14 capacity for identifying all the medications and supplements that might contain banned
15 substances on the WADA list are heightened. On the other hand, banned substances and
16 methods might become more accessible and controllable to athletes as they are more familiar
17 with the ways to access and to use the illegal methods (Kindlundh, Isacson, Berglund, &
18 Nyberg, 1998), and in some cases they might gain the knowledge (e.g., from team doctors) of
19 using undetectable doping methods or masking agents to avoid being caught in the doping
20 tests. This is a unique finding that raised a controversial issue in anti-doping education, and
21 highlights the importance of the ethical and professional conducts of sport medicine
22 professionals for banned performance-enhancing substances control in sport (Laure,
23 Binsinger, & Lecerf, 2003).

24 Moreover, previous research has documented that the use of banned performance-
25 enhancing substances is more prominent in some sports (e.g., cycling) believed to have a
26 culture of using banned performance-enhancing substances or doping methods, where doping
27 is more accepted and its negative consequences in terms of health and other external
28 contingencies (e.g., lengthy ban from sport) are often normalized among athletes (Lentillon-

1 Kaestner & Carstairs, 2010; Lentillon-Kaestner et al., 2012). A recent study comparing the
2 attitudes and prevalence of doping across athletes from different sports showed that athletes
3 involved in endurance, power, or speed sports had higher proportion of people who had
4 witnessed doping activities in their sport compared to athlete involved in motor skill (e.g.,
5 shooting) and team (e.g., soccer) sports. Furthermore, the endurance, power, or speed sports
6 had notably lower proportions of athletes who perceived that their sport was free from banned
7 substances (Alaranta et al., 2006). Also, athletes involved in motor-skill sports were more
8 likely to believe that doping had no performance-enhancing effects than athletes involved in
9 endurance sports (Alaranta et al., 2006).

10 Our findings were consistent with these propositions as the use of banned
11 performance-enhancing substances was articulated to be less common in team sports or
12 among players whose competitive levels were lower. This pattern of result is in line with the
13 central assumption of the Life-Cycle model of Performance Enhancement (Petroczi &
14 Aidman, 2008), in which doping is a goal-directed and functional behavior that serves as
15 particular purposes in sport, such as winning, being the best, or setting new records. In this
16 case, it is reasonable to attribute this finding to the fact that doping is considerably more
17 efficacious among athletes involved in individual sports or elite athletes because the
18 performance of these type and level of sport events is more dependent on speed, power, and
19 endurance, and the financial incentives are typically more substantial (Bloodworth &
20 McNamee, 2010). Nevertheless, we cannot totally exclude the possibility that the culture and
21 structure of some sport events where the oppositions, risks, and challenges of using banned
22 substances are perceived to be lower might set the stage for doping behaviors (Lentillon-
23 Kaestner, 2013; Ohl, Fincoeur, Lentillon-Kaestner, Defrance, & Brissonneau, in press). Thus,
24 the present study provided alternative evidence showing that athletes who perceived that
25 doping was uncommon in their sports might also reduce their intention to dope. This indicates
26 that it is important for researchers and practitioners to scrutinize the social processes of the
27 development and maintenance of an anti-doping culture and how the sporting bodies may
28 build up a clean and healthy image of the sport event (Lentillon-Kaestner, 2013; Ohl et al., in

1 press). Interventions to promote anti-doping in sport could potentially be more effective and
2 efficient by targeting the factors that are associated with the salient beliefs relevant to the
3 sport type of athletes (Lentillon-Kaestner, 2013).

4 **Limitations**

5 Several limitations of the current research should be acknowledged. First, the current
6 analysis focused almost exclusively on content (what interviewees said) rather than on their
7 form (the manner in which their comments were said) or indeed the interplay of interaction
8 between the interviewer and interviewees. Future work should be attentive to the form of the
9 comments, the co-constructed nature of talk, and to the variety of influences on what is
10 verbalized. As Randall and Phoenix (2009) have pointed out, what is verbalized is influenced
11 by the relationship and rapport between interviewer and interviews, in addition to the
12 interviewees' level of literacy, personality, motives and even mood on the day. Second,
13 although we invested considerable effort to canvass opinion across a variety of different
14 sports and levels, our approach aimed to derive in-depth, rich data that explored the key
15 beliefs of elite and sub-elite level athletes toward doping rather than make global
16 generalizations regarding beliefs common to all athletes. The detailed focus should be
17 considered as the strength of the current research because it serves to study emergent beliefs
18 based on an athlete-driven data rather than the information imposed top-down by researchers.
19 Such data is considered valuable as it led to the identification of beliefs that have not been
20 identified in previous research. Furthermore, the unique sets of beliefs identified here may
21 serve as a starting point for future studies that could examine the prevalence and importance
22 of these beliefs across further samples of athletes, and the findings found here may be
23 transferable to other settings.

24 **Conclusion**

25 The present study adopted a qualitative approach to study the salient beliefs of elite
26 and sub-elite athletes regarding their intentions and motivations to take banned performance-
27 enhancing substances in individual and team sports. Thematic content analysis identified
28 three global themes, including personal attitudes (reputation and getting caught, health effects,

1 financial incentives and rewards), social influence (coaches, parents, medical staff and sport
2 scientists), and control belief (i.e., insufficiency of doping testing, resource availability, and
3 sport level and type) from the focus group interviews. The beliefs identified might provide
4 useful information for anti-doping authorities to develop effective educational interventions to
5 reduce athletes' motivation and intention to dope and the factors than might lead them to
6 refuse using banned performance-enhancing substances and doping methods in sport.
7

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- 19
- 20

1 Footnote

2 ¹We provide the subject identifiers for demonstrating the notion of multivocality and
3 credibility of the themes. However, for anonymity and ethical concerns, identifiers are not
4 linked to participants' details such as age, years of participation in sport, competitive level,
5 apart from the gender of the participants and focus group to which they belonged.

1 Table 1

2 *Descriptive statistics of the focus groups*

| Sport | No of Participants | Mean Age (<i>SD</i>) | Mean Years in Sport (<i>SD</i>) | Sport Level |
|---------------------------|-----------------------|---------------------------|---|-------------------------|
| Athletics – Track (Mixed) | 5 | 15.40 (1.14) | 8.40 (3.21) | State |
| Athletics – Field (Men) | 5 | 18.80 (1.92) | 8.60 (1.67) | National/ State |
| Basketball (Men) | 6 | 17.40 (.89) | 11.00 (5.29) | Regional/ State |
| Field Hockey (Women) | 9 | 19.22 (1.09) | 7.00 (1.50) | State |
| Netball (Women) | 8 | 22.50 (1.60) | 12.88 (2.70) | International/ National |
| Swimming (Mixed) | 9 | 15.33 (2.34) | 7.22 (1.72) | Regional/ State |
| Waterpolo (Men) | 9 | 18.33 (1.66) | 12.44 (1.33) | State |
| Waterpolo (Women) | 6 | 17.17 (1.47) | 13.00 (.89) | State |
| Total sample | 57 | 18.02 (2.72) | 10.07 (3.38) | – |

3

4

1 Table 2

2 *The counts and coverage of quotes by themes*

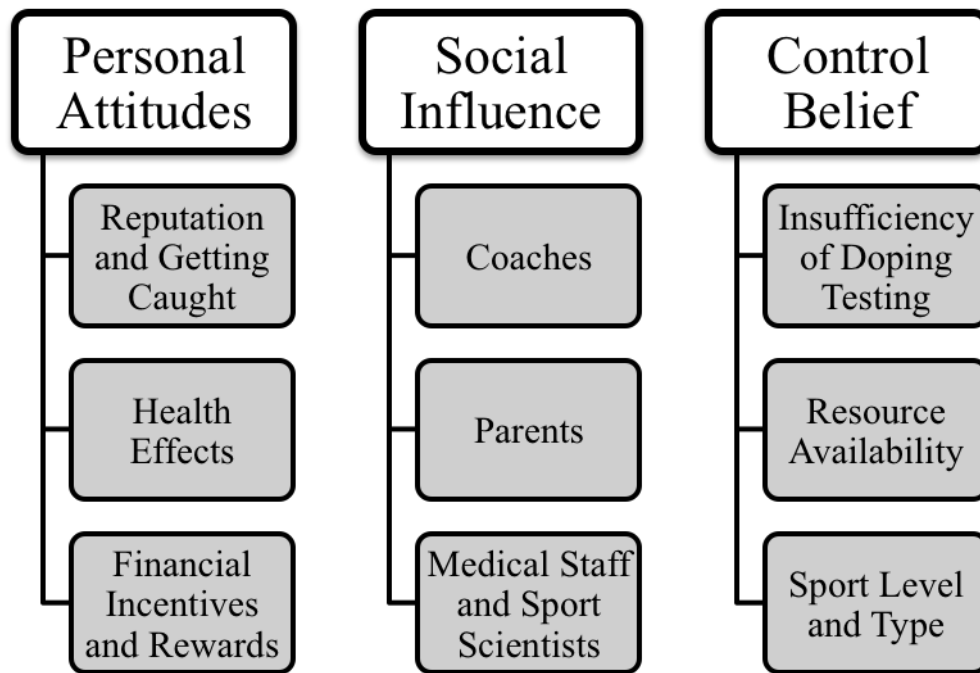
| Higher-order themes | Lower-order themes | Quotes (N) ¹ | Quotes (N) % | | Coverage ² | |
|---------------------|--------------------|-------------------------|--------------|--------|-----------------------|--------|
| | Reputation | 208 | 26.36% | | 16.82% | |
| Personal Attitude | Health | 108 | 13.69% | 51.33% | 11.69% | 42.37% |
| | Reward | 89 | 11.28% | | 13.87% | |
| Social Influence | Coaches | 57 | 7.22% | | 6.37% | |
| | Parents | 39 | 4.94% | 14.96% | 4.91% | 14.62% |
| | Medic | 22 | 2.79% | | 3.34% | |
| Control Belief | Doping Test | 30 | 3.80% | | 4.54% | |
| | Resource | 117 | 14.83% | 28.14% | 18.09% | 34.12% |
| | Sport | 75 | 9.51% | | 11.49% | |

3 *Note.* Reputation = reputation and getting caught; Health = health effects; Reward = Financial
 4 incentives and rewards; Medic = medical staff and sport scientists; Doping test =
 5 insufficiency of doping testing; Resource = resource availability; Sport = sport type and level.

6 ¹Quote (N) is the number of quotes retrieved for each theme.

7 ²Coverage is the word count of the quotes divided by the total word count of themes.

8



1

2 *Figure 1.* The typology of the emerging themes.3 *Note.* The top row displays the three higher-order themes, and their corresponding lower-
4 order themes are shown at the bottom.

5

1 Further references:

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