

Research paper

Doping control, providing whereabouts and the importance of privacy for elite athletes

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ABSTRACT

Background: To improve anti-doping efforts in sports, the World Anti-Doping Agency (WADA) introduced the World Anti-Doping Program, in which (among others) regulations for providing athletes' whereabouts are described. Because the effectiveness and efficiency of this system depends on the co-operation and compliance of athletes, the perspective of elite athletes is important. This paper answers the following research questions: What is the perspective of Dutch elite athletes on the current whereabouts system in general and how important is their privacy in providing whereabouts in particular? In addition, this study explores how far the whereabouts system can be developed in the future. Are athletes willing to accept greater invasions of their privacy in order to reduce administrative effort and whereabouts failures?

Method: A structured questionnaire was completed by 129 Dutch elite athletes registered in the national and/or international testing pool.

Results: The results of this study indicate widespread dissatisfaction with the whereabouts system. Most respondents support anti-doping testing in general, but many athletes feel that WADA's whereabouts system is unacceptable in several respects. In terms of physical privacy, there was a great dissatisfaction. Nearly half of the athletes felt that the '1-hour time slot' limits their freedom, but on the other hand, most athletes disagreed with the statement that the distinction between their sport and private life is disturbed. For almost one in three respondents, the whereabouts system has a negative influence on the pleasure they experience in being an elite athlete. In terms of informational privacy, almost all athletes had confidence in the confidential treatment of their whereabouts information.

Almost all athletes would accept giving their phone number to Doping Control Officials, but only half of the athletes would accept sharing their location on their mobile phone. Furthermore, almost two in ten of the athletes would accept wearing a permanent wrist or ankle bracelet or accept being implanted with a GPS chip in order to facilitate future anti-doping testing.

Conclusion: The current whereabouts system needs to be improved in order to increase athletes' satisfaction with the anti-doping rules. The athletes themselves need to be engaged in this process. The results of this study indicate that a majority of the athletes are not likely to accept a greater violation of their privacy than the current whereabouts regulations already entail.

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Introduction

For a long time in the past, doping tests were unsystematic and not very reliable, and consequently they were considered merely symbolic (Dimeo, 2007; Houlihan, 2004; Overbye & Wagner, 2013a). In order to improve this situation, WADA was established in 1999, "the aim of which was to develop, coordinate, and harmonize anti-doping policy and procedures on a worldwide basis" (Hanstad, Skille, & Loland, 2010; Hanstad, Skille, & Thurston, 2009,

p. 31; Wagner, 2009). Today, WADA strives to have a testing policy that ensures that athletes can be controlled at any time and at any place. Doping Control Officials must know where the athletes are in order to carry out random, unannounced, out-of-competition tests in addition to regular in-competition tests on the day of an athletic event. Therefore, in 2003, WADA introduced the World Anti-Doping Program, in which regulations for providing whereabouts were described (Hanstad, Smith, & Waddington, 2008; WADA, 2008).

Since the revised World Anti-Doping Code became effective in 2009, athletes have had to provide much more detailed information about their whereabouts. Athletes are required to specify one specific 60-min time slot for each day, during which they will be available at a specified location for testing (WADA, 2009a).

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For every day in the forthcoming quarter, these athletes have to identify where they will sleep, train, and compete in order to be located for out-of-competition drug testing at any time during those three months (cf. Dikic, Markovic, & McNamee, 2011). Athletes can also be tested without notice at other moments of the day, but at those times they cannot be charged with a whereabouts failure (Waddington, 2010, p. 257). If athletes fail on three occasions to provide their whereabouts (which can be any combination of missed tests and failures to file appropriate whereabouts information) within a period of eighteen months, the athletes can be suspended from competition (WADA, 2009b).

Because the success and credibility of the doping policy is partly dependent on the co-operation and compliance of athletes, it is important to understand the perspective of athletes on the whereabouts system (Alaranta et al., 2006; Bloodworth & McNamee, 2010; Dunn, Thomas, Swift, Burns, & Mattick, 2010; Sas-Nowosielski & Swiatkowska, 2007; Striegel, Vollkommer, & Dickhuth, 2002; Wagner & Hanstad, 2011). Moreover, the anti-doping system is likely to be more effective if it has the support of athletes (Hanstad et al., 2009; Houlihan, 2009, in: Waddington, 2010). According to Houlihan (2009, in: Waddington, 2010), athletes will be more effectively motivated to comply with an anti-doping program if there is a perception by those subject to the regulations that those regulations are reasonable, that they are reasonably implemented and that they are enforced fairly.

In recent years, several systematic studies on elite athletes' perspective on the whereabouts system were performed. Hanstad et al. (2009) studied the perspectives of Norwegian elite athletes using a structured questionnaire that was conducted in 2006. In addition, in 2007, the British Athletes Commission (2007; in: Waddington, 2010) studied the perspectives of British elite athletes on WADA's whereabouts system. Although most athletes defended the necessity of doping controls, these studies indicated an outspoken dissatisfaction with the system of whereabouts in general.

These studies were published before the revised whereabouts system came into effect in 2009. According to Waddington (2010), because this revised whereabouts system places even more obligations on the athlete, future studies could reveal even higher levels of hostility by athletes towards the whereabouts system. In a more recent study with Danish elite athletes, Overbye and Wagner (2013a) showed ambivalent perceptions about the whereabouts system. On the one hand, there was a high degree of acceptance of the whereabouts system, as a 'necessary evil'. On the other hand, athletes indicated that the system interfered negatively in their everyday life and the joy of being an athlete decreased. The trust in the whereabouts system, especially how it operated in other countries, was remarkably low.

The current whereabouts system clearly constitutes (potential) invasions of the privacy of athletes, which, according to Schneider and Butcher (2001), could only be warranted by the need to protect others from serious harm. The question is therefore whether such invasions of the privacy of athletes can be justified and whether these justifications are accepted by athletes themselves. How do athletes perceive the whereabouts system, how does it affect their own interpretation of privacy, and how far are they willing to go with new technology to monitor their whereabouts?

Methods

Procedure and participants

Perhaps surprisingly, the number of athletes within a country that are required to share their whereabouts' information with anti-doping organizations is not exactly known. Athletes can be a member of the Registered Testing Pool of the National Anti-Doping

Table 1

Background information of athletes that were approached by email ($n=888$) and respondents with a whereabouts requirement ($n=129$).

	Athletes that were approached by email ($n=888$)	Respondents with whereabouts requirement ($n=129$)
<i>Gender</i>		
Male	441 (50%)	53 (41%)
Female	445 (50%)	76 (59%)
<i>Age</i>		
<20 years	Unknown	11 (9%)
20–30 years		86 (67%)
≥30 years		32 (25%)
<i>Sports</i>		
Olympic/paralympic	656 (74%)	113 (88%)
Other	232 (26%)	16 (12%)
Team	486 (55%)	43 (33%)
Individual	402 (45%)	85 (66%)
Unknown		1 (1%)
<i>Level</i>		
Top-8	610 (69%)	100 (78%)
Other	278 (31%)	29 (22%)

Organization, of their International Federation, and/or (at certain times) of a major event organizer such as the International Olympic Committee around the Olympic Games period. There is no central institution that monitors these requirements.

In order to create a representative sample of Dutch athletes with a whereabouts requirement, we decided to approach all Dutch elite athletes who were likely to have a whereabouts requirement personally by This was done in two separate mailings in order to accommodate for the different event calendars of different sports. Those who did not go to the London Olympic or Paralympic games were emailed in July 2012 (with a reminder sent in August); those who did were emailed in October 2012 (with a reminder in November). In total, 888 athletes were approached. At that time, 452 Dutch athletes had a whereabouts requirement with the official National Anti-Doping Authority of the Netherlands. It was estimated that a total of 500 Dutch athletes had a whereabouts requirement at some organization at that time.

The total number of respondents was 157 (out of 888 approached), of which 129 had a whereabouts requirement (out of an estimated 500). The estimated response rate of our respondents is thus 26%. These represented 32 sports modalities and one hundred of these respondents were so-called 'A-status' athletes, which means that they perform at the top-8 level of the world in their respective specialism. Background information of the respondents and of the total group of approached athletes is given in Table 1. Slight statistical differences were found in sports characteristics and level between the approached and respondent groups.

Questionnaire

A questionnaire was designed to gather data on athletes' opinions about the whereabouts system in general and the importance of privacy in providing whereabouts in particular. The questionnaire was partly based on the questionnaire used previously by Hanstad et al. (2009). Opinions were assessed using a 5-point Likert scale (strongly disagree, slightly disagree, neutral, slightly agree, strongly agree; or never, sometimes, regularly, often, always). Open-ended questions allowed respondents to add qualitative comments to their responses.

Data analysis

Findings are presented in terms of descriptive statistics. For each Likert scale response, the percentage of athletes agreeing or

Table 2
Whereabouts-related backgrounds.

<i>Experience</i>		
<1 year	12 (9%)	(n = 126; 3 missing answers)
1–3 years	63 (50%)	
≥3 years	51 (40%)	
<i>Platform</i>		
ADAMS	41 (32%)	(n = 129)
Dopingautoriteit	86 (67%)	
Both	2 (2%)	
<i>Person providing information</i>		
Themselves	125 (97%)	(n = 128; 1 missing answer)
Family	12 (9%)	
Sport organization	1 (1%)	
Others	0 (0%)	
<i>Time spent on quarterly updates</i>		
≤10 min	30 (24%)	(n = 126; 3 missing answers)
11–20 min	37 (29%)	
21–30 min	25 (20%)	
31–60 min	21 (17%)	
≥60 min	13 (10%)	
<i>Time spent on daily updates (in minutes per week)</i>		
≤10 min	85 (67%)	(n = 127; 2 missing answers)
11–20 min	28 (22%)	
21–30 min	9 (7%)	
31–60 min	4 (3%)	
≥60 min	1 (1%)	

disagreeing with each of the statements is pooled. Mann–Whitney *U* tests and Kruskal–Wallis tests were used to investigate differences between the subgroups identified in Table 1. Significance was set at a level of 0.05.

Qualitative comments were used to complement or reinforce the quantitative results. These qualitative comments are reported to provide a more detailed illustration of the athletes' perspectives. These statements are presented not as representative of the entire group of respondents, but rather as illustrative comments on the kinds of issues that preoccupied athletes.

Results

Doping control experience

Fig. 1 shows the athletes' experience with doping control over the last 12 months. Eleven athletes (9%) stated that they had no doping tests and 26 athletes (20%) indicated that they had no out-of-competition tests in the previous year. Most athletes stated that they received one to four doping controls in total, of which one or two were out-of-competition controls.

Experiences with whereabouts system

Table 2 shows the whereabouts-related backgrounds of the respondents. Almost all the athletes provide their whereabouts themselves. Two out of three of all respondents spend up to 30 min per week filling out their quarterly forms (whereabouts need to be sent in per period of three months) and spend another 1–10 min per week checking and (possibly) updating this information.

Around 9% of the respondents indicated that they do not always provide the (obligatory) information on their overnight address and their 'one-hour time slot'. A similar percentage received an official 'filing failure' and in addition to this 21% had experienced a definitive 'missed test' at least once. Only 29% stated that they were never afraid to miss a doping control during their 'one-hour time slot'.

Just over 40% agreed with the statement 'Providing whereabouts is a difficult task', while 12% took a neutral position. More specifically, if the responses 'regularly', 'often' and 'always' are added

Table 3
Statements regarding doping and the importance of the whereabouts system.

Statement	Agree – neutral – disagree (%)	n
1. The use of doping is a big problem in sport in general	80 – 12 – 9	127
2. The use of doping is a big problem in my sport	28 – 13 – 59	125
3. The use of doping is a big problem in Dutch elite sport	11 – 44 – 45	128
4. I think it is important that elite sport in general is free of doping	93 – 2 – 5	128
5. I think the whereabouts system is important in detecting users of doping	63 – 18 – 19	128
6. I think the whereabouts system is important in preventing the use of doping	59 – 20 – 22	128
7. A whereabouts system is necessary to carry out unnoticed out-of-competition tests	63 – 16 – 22	128
8. An anti-doping program can function well without whereabouts regulation	35 – 27 – 38	128

together, 20% of the athletes experienced technical failures in the whereabouts system itself. Furthermore, 17% could not change their whereabouts information because no computer was available and 26% could not do this because of a lack of Internet access. Such technical difficulties were more frequently reported for the internationally used ADAMS-system ("Anti-Doping Administration and Management System") than for the national system. In total, 21% disagreed with the statement 'I have confidence in the technical aspects of the current whereabouts system'. A recently introduced mobile application to provide and update whereabouts information was welcomed by most of the athletes, with 90% agreeing that it was an improvement to the existing system and 69% stating that it was easy to use (currently this mobile application is solely available for athletes who provide their whereabouts to the Dutch system, not to the international ADAMS-system).

Perceived importance of whereabouts system

Doping is perceived by the respondents to be a problem for sports in general, although the problem becomes smaller when they look at their own direct environment. The whereabouts system is felt to be an important part of the anti-doping system by a majority of the athletes, but there is an ambiguous feeling whether an anti-doping program can function well without whereabouts regulations (Table 3). This ambiguity does not interfere with the feeling that doping should continue to be banned: 90% of the athletes felt this way, with only 4% favouring an option where doping is allowed under medical guidance and 6% remaining unsure.

Statistical analyses revealed that females found the whereabouts system even more important than males, which was demonstrated by significantly different scores regarding statements #5, 7 and 8. Respondents from the sports of track and field and cycling agreed significantly more to statement #2 in comparison to respondents from other sports.

The current World Anti-Doping Code has a standard sanction for three whereabouts-failures in an 18-month period of 1–2 years of ineligibility, depending on the degree of fault of the athlete. Of all the respondents, 21% agreed with this sanction but 52% thought a lesser sanction was more appropriate. Only 1% thought that this particular sanction should be increased and 27% were unsure.

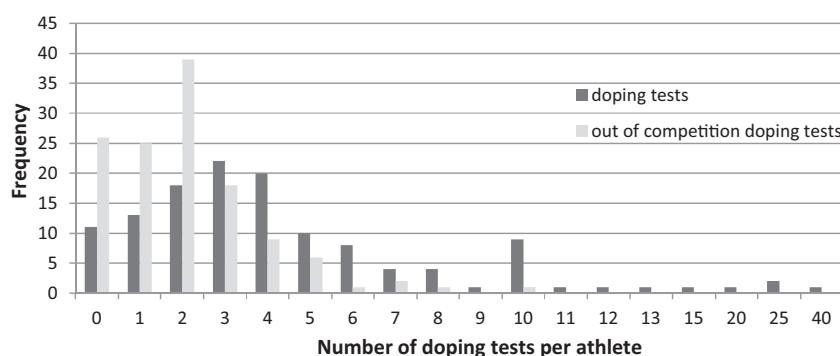


Fig. 1. Frequency chart of the total number of doping tests and the number of out-of-competition doping tests athletes had in the last 12 months ($n = 128$; 1 missing answer).

Privacy aspects of whereabouts system

The respondents feel that their privacy is important, but opinions differ on the degree to which it is compromised by the current anti-doping regulations. It is quite clear that their lives are greatly affected by these regulations already. Their thoughts on other possible and more extensive approaches to whereabouts control show that support for whereabouts measures quickly declines when permanent tracking systems would be introduced (Table 4). Female respondents felt significantly more at ease with the current whereabouts regulations (more agreement with statement 15 and less with statement 17). At the same time, males were more inclined to wear a permanent bracelet as a possible alternative to the current doping control whereabouts system.

Discussion

In this study, the perspectives of Dutch elite athletes on the current whereabouts system in general and their privacy with regards to providing whereabouts in particular were studied. Using a structured questionnaire, this study explored how the whereabouts system can be developed in the future. Are athletes willing to accept an even greater invasion of their privacy in order to reduce administrative effort and whereabouts failures?

In general, almost one in three agreed with the statement that the whereabouts system has a negative influence on the pleasure they experience in being an elite athlete. In terms of their experience with sending in whereabouts information, more than half of the athletes stated that providing whereabouts takes them a lot of time and that providing whereabouts is a difficult task. This is backed up by data that shows that two thirds of all respondents spend up to 30 min per week filling out their quarterly forms and spend another 1–10 min per week checking and updating this information.

The whereabouts application for mobile phones is used by slightly less than half of the athletes. Although most of them think it is easy to use and a good addition to the whereabouts system, some athletes experienced trouble and thought it has some limitations. In terms of providing whereabouts information, almost half of the athletes stated that they forget to provide their whereabouts sometimes, and even more than one in three stated that they forget to do so regularly, often or always. In addition, almost half of the athletes stated that they sometimes worry about being at the right place in accordance with their submitted whereabouts information, and even more than one in four stated that they worry about that regularly, often or always.

Although most athletes stated that they sometimes, regularly, often or always experienced problems when changing their whereabouts information, due to technical failures in the whereabouts system, or because they had no computer or no internet connection

Table 4

Statements regarding privacy and privacy aspects of the whereabouts system.

Statement	Agree – neutral – disagree (%)	<i>n</i>
9. I attach much importance to my privacy	72 – 14 – 14	125
10. I have nothing to hide, so I do not attach any importance to the effect of the whereabouts system on my privacy	49 – 18 – 33	124
11. I think it is good that athletes must be available for testing seven days a week, 24 h a day	35 – 16 – 49	125
12. I think my privacy is violated due to the requirement of providing whereabouts	30 – 23 – 46	125
13. I think anti-doping organizations interfere too much in my private life	26 – 22 – 53	125
14. The '1-hour time slot' limits my freedom	43 – 14 – 43	125
15. Despite the current whereabouts system, I feel free to seclude myself	60 – 23 – 17	122
16. I have confidence in the confidential treatment of my whereabouts information	89 – 6 – 5	123
17. The current whereabouts system has a negative influence on the pleasure I experience in being an elite athlete	28 – 14 – 58	125
18. I would accept giving my (mobile) phone number to Doping Control Official	94 – 2 – 4	125
19. I would accept sharing my location through my mobile phone with Doping Control Officials, so I can always be found for anti-doping testing	47 – 4 – 50	123
20. I would accept wearing a permanent wrist or ankle bracelet, so I can always be found for anti-doping testing.	18 – 2 – 79	125
21. If it would be possible in the future, I would accept implanting a microchip, so I can always be found for anti-doping testing	20 – 5 – 75	124

at their disposal, it is striking that more than three in four athletes agreed with the statement that they have confidence in the technical aspects of the whereabouts system.

One athlete (0.8%) got a suspension that was caused by three official 'missed tests' and/or 'filing failures' within an 18 month period ($n = 126$). Regarding the suspension of one to two years, which occurs after three official 'missed tests' or 'filing failures' within 18 months, most athletes stated that this sanction should

be shorter. Athletes stated that the sanction would be fair if anti-doping tests were consciously avoided, but they stated that it is not fair that an administrative failure can result in the same suspension as the use of performance enhancing drugs.

Most athletes in this study agreed with the statement that the use of performance-enhancing drugs is a big problem in sports in general. However, just one in four agreed that it is a big problem in their own sport and less than one in ten agreed that it is a big problem in Dutch elite sports. In addition, almost all athletes agreed that it is important that sports in general are free from the use of performance-enhancing drugs.

In terms of the importance of the whereabouts system in the anti-doping program, slightly more than half of the athletes agreed with the statement that the whereabouts system is important for detecting and preventing the use of performance-enhancing drugs and exactly half of them agreed that the system is necessary to carry out unnoticed out-of-competition tests. On the other hand, almost half of the athletes agreed that an anti-doping program can function without whereabouts regulation.

When discussing the issue of privacy in relation to modern sports, doping control and the whereabouts system, it is useful to distinguish between three types of privacy: physical privacy, informational privacy and decisional privacy (cf. van Hilvoorde, 2012). *Physical privacy* concerns access to people and personal spaces and is similar to the 'right to be left alone' (Teetzel, 2007; Warren & Brandeis, 1890). *Informational privacy* concerns access to personal information. This notion of privacy is closely related to the origins of the popular press. It has gained more relevance with the evolution of modern computer technology and developments in bioinformatics. *Decisional privacy* concerns interference with personal choices.

In order to protect the credibility of athletic performance, the distinction between professional and private life has almost disappeared in elite sport. Doping authorities claim the right to know where the athlete is at almost all times. To be able to test every athlete at any moment, athletes are required to be absolutely honest and open with respect to their whereabouts. This denies them privacy with respect to the 'right to be left alone'. The whereabouts system not only affects the individual's life as an athlete, but also their life as a private person (cf. Kayser & Broers, 2012).

In terms of *physical privacy*, there was a great disparity in the athletes' perspectives on the extent to which the whereabouts system violated their privacy. Most athletes disagreed with the statement that the distinction between their sport and private life is disturbed. On the other hand, however, almost half of the athletes stated that the '1-hour time slot' limits their freedom. This perspective is illustrated by the following quotations from two respondents:

"I think that it is important that sports stay free of doping, but it must not be exaggerated, it is about the sports. I think that there should be tests at competitions, not at home or at work/school. You have to pay attention to your 1 hour-timeslot, which costs a lot of energy that you need in training. I regularly notice stress from colleague athletes about having to change their whereabouts when training changes, which should not be the intention."

"Athletes should be innocent until proven guilty. It should, indeed, be possible to work with a GPS tracking system, but still doping tests should be held at convenient moments, not during an exam, selection, concert, date, family reunion, etc. If that would be possible, we will have a good system: a combination of freedom of movement and administration on one hand, and a doping agency that tests at more convenient moments on the other hand."

In addition, most athletes agreed with the statement that, despite the whereabouts system, they feel free to seclude themselves. However, half of the athletes disagreed with the statement that athletes should be available for testing seven days a week, at any time of the day.

The World Anti-Doping Code insists that the submitted whereabouts information "shall be maintained in strict confidence at all times, shall be used exclusively for purposes of planning, coordinating or conducting testing and shall be destroyed after it is no longer relevant for these purposes" (WADA, 2009b, pp. 87–88). A relevant question that we tried to answer in this research is: Do the elite athletes trust the confidentiality of their whereabouts information?

In terms of *informational privacy*, almost all athletes responded that they had confidence in the confidential treatment of their whereabouts information and in the fact that their information will not be used for purposes other than locating them for doping testing.

According to Carolina Klüft, Swedish Olympic heptathlon champion, the system was turning her into a nervous wreck. "It is bloody uncomfortable to know that my sloppiness and my spontaneity can make me equivalent to someone who uses drugs" (Roos, 2006, in: Hanstad & Loland, 2009, p. 7). Klüft suggested implanting a data chip into her body so that doping agencies could follow her at all times. A similar statement was made by Canadian Olympic speed skating champion Christine Nesbitt. After submitting her whereabouts for the forthcoming quarter she posted the following statement on Twitter: "Whereabouts, you are now complete for the next 3 months. I still wish I was just implanted with a GPS device for anti-doping to track me" (Nesbitt, 2012).

How do Dutch athletes value these tracking technologies? When proposing new possible methods of tracking athletes' whereabouts in future regulations, only half of the athletes agreed with sharing their location on their mobile phone with Doping Control Officials so they could always be found for anti-doping testing without having to provide whereabouts manually. It is no surprise that a great majority of the athletes stated that they would be unwilling to wear a permanent wrist or ankle bracelet in order to be found for anti-doping testing. A great majority also disagreed with the proposal that they be implanted with a microchip with a GPS tracker. The following statements are good illustrations of the athletes' resistance against further invasion of their privacy:

"I think providing whereabouts is not pleasant, but I know it is the only way to keep sports free of doping. It is a violation of privacy, but there is no better alternative. I think implanting a microchip or sharing location by GPS is absolutely not appealing, because in that way, they can see where you are all the time. That is violation of privacy. I think it will be adopted shortly, however, because it would make tracking very easy."

"About that GPS system, we are not prisoners. People with money will find methods to avoid testing anyway."

Although a minority of the respondents was in favour of the use of new technologies, it is striking that 18% would even accept wearing a permanent wrist or ankle bracelet and 20% would accept wearing a microchip, as can be illustrated with the following statement by one of the athletes:

"Stop providing whereabouts, I agree with implanting a chip or I will wear a wrist or ankle bracelet all the time!"

The notion of *Decisional privacy* also involves the question of whether athletes should be involved in the discussion on doping rules and their application in sport. The decisions that are made regarding how the doping regulations are applied significantly

affect the athletes themselves, which makes it at least questionable that in relation to doping policy athletes are routinely relegated to the margins of the debate (cf. Houlihan, 2004). Sports policy is generally made for athletes, rarely in consultation with athletes, and almost never in partnership with athletes. Although WADA's policy has the support of the Athletes' Committee within WADA, according to Waddington (2010), it is clear that the Athletes' Committee can hardly claim to be the legitimate representative of athletes in general. For one thing, the committee's members are appointed by WADA's Foundation Board and not chosen by their peers. The importance of the voice of the athletes themselves can hardly be exaggerated (cf. Alaranta et al., 2006; Bloodworth & McNamee, 2010; Breivik, Hanstad, & Loland, 2009; Dunn et al., 2010; Sas-Nowosielski & Swiatkowska, 2007; Striegel et al., 2002; Wagner & Hanstad, 2011).

The results of this study are in several respects similar to those of other studies (Hanstad et al. (2009) British Athletes Commission 2007, in: Waddington, 2010; Overbye & Wagner, 2013a, 2013b), in particular with respect to the widespread dissatisfaction with the whereabouts system. The athletes supported anti-doping testing, but felt that WADA's whereabouts system was unacceptable for several reasons.

With regard to whereabouts failures, the athletes' perspectives found in this study are consistent with the findings of Hanstad et al. (2009) in the Norwegian study. In both studies, athletes stated that it is not fair that an administrative failure to provide whereabouts results in the same suspension as the actual use of performance-enhancing drugs. Another similarity between the studies is that they both reveal the paradox that most athletes stated that the use of performance-enhancing drugs is a big problem in sports in general, but only a minority of the athletes stated that it was a big problem in their own sport. Many anti-doping professionals find similar results in national surveys, but these results never reach scientific literature (personal communications). A minority of athletes also agreed with the statement that athletes should be available for anti-doping testing seven days per week. In line with other studies, one in four of the athletes reported that providing the whereabouts information affects their everyday life as an elite athlete.

The results of this study also show some remarkable differences with other studies. Regarding technical problems with the whereabouts system, in the study of Hanstad et al. (2009), 34.7% of the Norwegian athletes stated that they were not able to update their whereabouts due to technical problems. On the other hand, more than half of the Dutch elite athletes in this study stated that they sometimes, regularly, often or always have problems providing whereabouts due to technical problems. This difference in experience is remarkable since the questionnaire of Hanstad et al. (2009) was conducted in 2006. Nowadays, due to technical improvements over the years, the system should be more reliable. The fact that our sample includes two subsets of whereabouts-platform users (the national Dopingautoriteit system and the international ADAMS-system) makes it difficult to draw a general conclusion regarding this finding.

The surveys of Hanstad et al. (2009) and the British Athletes Commission (2007, in: Waddington, 2010) were conducted before the whereabouts system was revised. Because in the renewed whereabouts system athletes are required to provide their whereabouts in more detail, it was expected that in this study athletes would experience a greater invasion of their privacy. However, this difference was not found. An explanation may be that nowadays, due to the wide use of social media websites such as Twitter and Facebook, which broadcast location updates, the invasion of privacy involved in providing one's whereabouts is more accepted.

In all previous studies, a great dissatisfaction with the whereabouts system was found. In response to the criticism, WADA claimed that the whereabouts system is an acceptable and

justifiable price athletes have to pay to compete in a fair and clean sport. From an institutional perspective, one can argue that athletes who choose to engage in elite sports must accept the rules of the activity. According to WADA, in principle every athlete is free to withdraw from the surveillance system by withdrawing from elite level competition in the sport. Therefore, Hanstad and Loland (2009) concluded, despite all the criticism, "that the system can be conditionally accepted as constituting justifiable anti-doping work".

According to Waddington (2010), WADA's argument about the voluntary character of the whereabouts system is based on an "individualized conceptualization of the elite athlete, who is presented as an asocial, isolated individual who is able to make a free and unconstrained choice" about participation in his or her sport and the whereabouts system. Young athletes simply do not have the freedom to choose to participate in their sport or to withdraw from their sport when they do not like the whereabouts system and it is questionable whether you could ask the same of athletes who make a professional career of their athletic ability.

The results of this study show serious dissatisfaction among Dutch elite athletes with the current whereabouts system. Many athletes experience violations of their privacy. Furthermore, most athletes would not accept future changes in the system that would mean a greater invasion of privacy. Despite all of the athletes' criticism of anti-doping testing and the whereabouts system in the past, WADA continues to develop a system that is increasingly invasive. Because the cooperation of athletes is essential to developing and introducing changes in the whereabouts system, the athletes' perspectives should and could be taken more into account.

Conflicts of interest

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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