



To dope or not to dope: Elite athletes' perceptions of doping deterrents and incentives



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ABSTRACT

Aim: This study aims to examine the circumstances which athletes say affect their (hypothetical) considerations of whether to dope or not and explore the differences between athletes of different gender, age and sport type.

Methods: 645 elite athletes (mean age: 22.12; response rate: 43%) representing 40 sports completed a web-based questionnaire. Participants were asked to imagine themselves in a situation in which they had to decide whether to dope or not to dope and then evaluate how different circumstances would affect their decisions.

Results: Multiple circumstances had an effect on athletes' hypothetical decisions. The most effective deterrents were related to legal and social sanctions, side-effects and moral considerations. Female athletes and younger athletes evaluated more reasons as deterrents than older, male athletes. When confronted with incentives to dope, the type of sport was often a more decisive factor. Top incentives were related to qualified medical assistance, improved health or faster recovery from injury, the low risk of being caught and the threat posed to an elite career.

Conclusions: Our results reveal that numerous circumstances affect athletes' thoughts on doping and athletes of different gender, age and sport type reacted differently to a variety of circumstances that may potentially deter or trigger doping. Particularly notable findings were the potential role of doctors in athletes' doping and that the current punitive anti-doping approach seems to deter athletes, although the fear of social sanctions was almost as great a deterrent.

Implications: Anti-doping prevention strategies should be diversified to target specific groups of athletes.

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1. Introduction

Current anti-doping policy is characterised by (growing) lists of banned substances and techniques, by doping tests and by an emphasis placed on the detection of and penalties for athletes who are tested positive (Waddington & Smith, 2009). The notion that the risk of being caught and excluded from their sport deters elite athletes from using substances or methods banned by anti-doping authorities is a central paradigm of current anti-doping policy. To ensure "clean" sport, anti-doping authorities use vast resources on monitoring and testing athletes and have increased the number of doping tests every year since 1986 (Catlin, Fitch, & Ljungqvist, 2008). With the establishment of the World Anti-Doping Agency (WADA) in 1999 and the first WADA Code in 2004, a comprehensive anti-doping programme was implemented, including – among other things – the athletes' whereabouts reporting system

(enabling unannounced in- and out-of-competition testing) and the biological passport.

Yet the percentage of athletes who are tested positive has remained approximately the same: around 2% every year (WADA, 2010). This, however, does not reflect the actual prevalence of doping: research has consistently found doping prevalence rates much higher than positive test results show (e.g. Backhouse, McKenna, Robinson, & Atkin, 2007; Özdemir et al., 2005; Petróczi & Naughton, 2011; Pitsch & Emrich, 2012; Striegel, Ulrich, & Simon, 2010; Uvacek et al., 2011). Furthermore, doping tests for some of the most effective performance-enhancing substances and methods lack validity (Ashenden, Gough, Garnham, Gore, & Sharpe, 2011; Lundby, Robach, & Saltin, 2012; Sönksen & Holt, 2009). Scholars therefore criticise current anti-doping policy for being ineffective and too costly (e.g. Kayser, Mauron, & Miah, 2007; Lippi, Banfi, Franchini, & Guidi, 2005).

To identify effective (and less costly) deterrents, we need to know why and when some athletes dope and why others refrain from doing so. A broader (social science) approach to athletes' doping is crucial if it is wished to shift anti-doping policy away from a "detection-based deterrence" towards a "prevention-based

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deterrence” strategy (Mazanov & McDermott, 2009). Due to the sensitive nature of the topic, however, we lack empirical knowledge about why athletes engage in doping practices (Mazanov & Huybers, 2010; Petróczi & Haugen, 2012; Pitsch & Emrich, 2012) and how drug use varies by sport, age, gender or country (Houlihan, 2002).

The construction of *theoretical* models for athletes’ decisions to use performance-enhancing drugs and methods (PEDM models) has been a step in the direction of a broader understanding of athletes’ doping (see, for example, Donovan, Egger, Kapernick, & Mendoza, 2002; O’Donnell, Mazanov, & Huybers, 2006; Petroczi & Aidman, 2008; Strelan & Boeckmann, 2003). The models consider multiple factors of a situational, contextual and personal nature assumed to either facilitate or hinder athletes’ decisions to use PEDM (for a comparison of the models see Mazanov & Huybers, 2010; Stewart & Smith, 2008). However, although some empirical studies confirm that the models are useful for understanding doping and that multiple factors are important for athletes’ decisions, we still do not have sufficient knowledge about factors that influence an athlete’s decision to dope: only three of the models have been tested empirically – all studies were carried out in Australia (Gucciardi, Jalleh, & Donovan, 2011; Huybers & Mazanov, 2012; Mazanov & Huybers, 2010; Mazanov, Huybers, & Connor, 2011; Strelan & Boeckmann, 2006) – and the researchers themselves point to the necessity for further empirical research in this area (Gucciardi et al., 2011; Mazanov & Huybers, 2010).

Furthermore, none of the studies have considered the effects of gender, age or sport type on athletes’ decisions, although other studies suggest that there are several reasons for believing that such effects exist:

First, numerous studies have found gender differences with regard to prevalence rate, attitude or hypothetical willingness to use illegal performance-enhancing means (e.g. Alaranta et al., 2006; Bloodworth, Petróczi, Bailey, Pearce, & McNamee, 2010; Lucidi et al., 2008; Pitsch & Emrich, 2012). These studies revealed that male athletes were more likely to be willing to use performance-enhancing drugs or doping agents than were female athletes. Hence, men and women may react differently to various deterrents and incentives.

Second, other studies have suggested or shown changes in patterns of drug use (e.g. progression of products used) throughout athletes’ careers (Brissonneau, 2010; Hauw & Bilard, 2010; Houlihan, 2002). Doping practices are most likely to occur after years of being involved in elite sport, and therefore we expect doping to be linked to some extent to the age of the athletes.

Third, other studies have found differences between sports with regard to the percentage of positive tests results and the types of substance used (Brissonneau, 2008; Thuynne & Delbeke, 2008; WADA, 2010), as well as in the estimated prevalence of doping (Pitsch & Emrich, 2012; Striegel et al., 2010). This may be caused by different physical demands within different sports (Alaranta et al., 2006). This concurs with the “vulnerability thesis” proposed by Loland (2004) that suggests that athletes from sports requiring bio-motor qualities rather than technical or tactical skills are more vulnerable to doping. Thus, we may also expect doping deterrents and incentives to vary with sport types.

1.1. Aims and contextualisation

In this article, we examine the circumstances which athletes say would affect their considerations of whether to dope or not to dope, and we explore the differences between athletes of different gender, age and sport type.

We do so using a unique dataset collected by the authors comprising the answers of 645 Danish elite athletes representing 40

different sports. These data have two advantages. First, quantitative studies – taking this number of multiple deterrents and incentives into consideration – are rare. Second, we include elite athletes from a variety of sports at a high performance level. The data therefore enable a variety of analyses across gender, age and sport types. Thus, not only do we posit and identify the relevance of multiple circumstances for athletes’ decisions on doping; we also provide empirical knowledge of the importance of these circumstances.

It study is an exploratory study; it aims at finding (further) empirical backing for the theoretical claims about doping deterrents and incentives. Data were collected from Danish elite athletes only, and it can be assumed that the national context will influence athletes. Nevertheless, the case of Danish elite athletes is interesting in particular with regard to the effect of the ban as a sanction vs. other deterrents, because anti-doping policy has a high priority among Danish politicians. The 2003 summit which agreed on the first WADA code took place in Copenhagen, and then the (former) Minister of Culture became a committed vice-chairman of WADA (2004–2006). The political discourses and policies against drug use can be characterised as rather censorious; since 2005, for example, even fitness doping has been banned in some fitness centres (Christiansen, 2009). Furthermore, doping and anti-doping rules have been recurrent topics in the public debate, especially around the doping revelations of Danish Tour de France winner Bjarne Riis and the expulsion of Danish rider Michael Rasmussen during the 2007 Tour de France when he was leading the race (Wagner & Hanstad, 2011).

2. Theoretical background: circumstances that (may) influence athletes’ decisions to dope or not to dope

The theoretical framework of the study is explorative in character: social science research has taken a variety of approaches to explaining elite athletes’ use of doping – and has included a variety of theoretical assumptions about how athletes’ behaviour is influenced. To identify multiple deterrents and incentives, we combine different social science approaches and empirical findings on why athletes dope (see Table 1). In this way the PEDM models have been inspirational for developing the theoretical framework of this study.

The main assumption of the study is that athletes’ use of doping (typically) is a conscious decision, but also an emotional and not necessarily rational and well-informed decision. This will be elaborated in the following sub-sections. Doping takes place in a certain context and is influenced by a variety of different factors and circumstances. In this way we refer to doping as a contextual and dynamic process, pointing out that cultural and social factors are important and enable changes in doping-related perceptions and behaviours during the career of the athlete; hence, athletes would be expected to react differently to factors that may facilitate or deter the use of doping.

2.1. Doping as an (inherent) logic of sport: the urge to win and break records – and its increase with the commercialisation of sport

Scholars point out that athletes’ attempts to win and striving to break records are a logical outcome of the core principle of (modern) elite sport (Christiansen, 2007; Heikkala, 1993; Møller, 1999). The desire to win may also be a reason for doping (e.g. Ehrnborg & Rosén, 2009; Laure & Reinsberger, 1995; Mazanov & Huybers, 2010; Striegel, Vollkommer, & Dickhuth, 2002). Hence, doping can be understood as consistent with this inherent logic of elite sport.

Table 1
Overview of research themes and items applied in the study.

| Theme | Items | |
|---|---|---|
| | Deterrents | Incentives |
| 2.1 <i>Doping as an (inherent) logic of sport: The urge to win and break records – and its increase with the commercialisation of sport</i> | That there could be financial consequences for you if you were found out | That it would ensure you a victory at Olympics, World Championships or other major competitions/tournaments That it would give you the last push towards top results (e.g. that you would win medals instead of always being placed as number four or that you would qualify for the final) That you would be financially secure for many years after ending your elite career That the substance would ensure an increase in muscle mass That the substance would increase your self-confidence/trust in one's own abilities That the substance would ensure weight loss That it could be interesting to experience what the effect is really like |
| 2.2 <i>Doping as a reaction to competitors' use of doping: A game theoretical approach</i> | | That you know your competitors have started to use substances from the prohibited list That it will be a necessity to continue to compete in your sport at the elite level |
| 2.3 <i>Ban from sport and the perceived likelihood of being caught: Effects of anti-doping regulations</i> | That you would be banned from your sport if you were found out That it is hard to dope in your sport without being found out (That you do not want to do anything that is illegal) | That you are sure of not being selected for a doping control That you are 100% sure that you will not be found out (e.g. that it cannot be traced or the person you procured it from would not be found or report it) |
| 2.4 <i>Personal moral values: Anti-doping norms, no short cuts allowed and the feeling of guilt and shame</i> | That you would have a guilty conscience That you think it is unfair to competitors who do not use doping That it could have consequences for others if you were found out That you would not be able to enjoy your good results That you think doping is an unnatural way to enhance performance That you do not want to do anything that is illegal That suspicion might be cast on your previous results That you do not want the great performance-enhancing effect (as some doping substances can produce) induced by a drug | |
| 2.5 <i>Doping as a coping strategy to counteract unwanted (inherent) risks of elite sport: A tool to overcome critical events during the career of an elite athlete</i> | | That you have not improved your performance level for a long period of time That you meet new demands during career transitions, e.g. junior to elite or amateur to professional That the substances would ensure you can return faster to sport after long-lasting injury That the substances would ensure you can return faster to sport after a long period of illness |
| 2.6 <i>Contextual factors: Sports culture, sports network and significant others</i> | That your coach and/or experts would disapprove of your using the substance/method That your coach and/or peers within the sports environment would disapprove you That your family and/or peers outside the sports environment would disapprove of you That you risk being exposed by the media That you think it would be embarrassing if you were found out That you do not know how to procure the means/substances | That your coach supports use That your social environment supports use That the drugs are provided/made accessible That you already have done everything else to enhance performance |
| 2.7 <i>The role of sports medicine in doping: The impact on health and the body</i> | That you are afraid there might be unknown long-term side-effects That you are afraid it might impair your ability to have children That you are afraid it might change your body in an uncontrolled manner (e.g. that it might alter the proportions of your body or make it more masculine/feminine) That you are afraid the body would become dependent on a drug | That you can get qualified medical supervision That the substance may reduce the damage to the body caused by hard training, many competitions or injuries (Faster return to sport after long-lasting injury) (Faster return after illness) |

Note: Some items are ambiguous and can measure different concepts, e.g. *doping is illegal* as a reason to refrain from doping may be interpreted as support for “anti-doping norms and values” as well as an “effect of anti-doping regulations”. *Use of illegal drugs* to return faster from injury can be seen as a “coping strategy to counteract risk in elite sport” or imply “the role of sports medicine” or “the impact on health”.

In accordance with such a “logic of sport”, Coakley (2009) depicts four core norms of sport ethic: dedication to “the game”, strive for distinction, accept risk and play through pain, accept no obstacles in the pursuit of success (p. 163). Accordingly, doping use can be understood as athletes’ “deviant overconformity” (p. 179) to these core norms of sport. Even so, doping violates the constituted rules of sport.

Financial and material benefits related to victories and records are not “inherent” in sport; they are, however, a consequence of the commercialisation and professionalisation of sport and thus an essential (and intrinsic) component of many sports today. The pressure arising from athletes’ necessity to finance their sporting career and the expected or potential financial or material outcomes for athletes deriving from records and victories must be considered as potential incentives as well (Haugen, 2004; Maennig, 2002; Mazanov & Connor, 2010). We thus expect the urge to win (and run risks) to be more intense when the financial gain and prestige of the victory is high(er).

However, if enhanced performance is an incentive for doping, we must also consider athletes’ perceptions of the performance enhancing effect of doping in their sport.

2.2. Doping as a reaction to competitors’ use of doping: a game theoretical approach

Striving to win as a motive for doping is also present in studies inspired by game theory’s “prisoner’s dilemma” – as a two-person game or as an extended “multiple-person” game (e.g. Bird & Wagner, 1997; Breivik, 1987, 1992; Eber, 2007; Eber & Thépot, 1999; Haugen, 2004; Tangen & Breivik, 2001). In this approach, doping is understood as the result of a decision dilemma where – in order to optimise their own situation and to win – athletes respond strategically (and rationally) to the perceived actions of other athletes, including their potential doping: doping is often the best (and only) possible strategy for ensuring victory if there is a risk that a competitor dopes. Thus, doping is instrumental – a tool to achieve a goal, not an end in itself (Haugen, 2004).

2.3. Ban from sport and the perceived likelihood of being caught: effects of anti-doping regulations

In their decisions about doping, athletes may take into consideration not only the advantages but also the perceived likelihood of being caught and the perceived gravity of the sanctions for their careers. Current anti-doping policies focus on detection and sanctions for athletes caught doping, and athletes who dope risk being banned from sport. Hence, doping tests and penalties (ban from sport) are intended to be strong deterrence factors. A number of studies have confirmed that athletes’ assessments of the likelihood (risk) of being caught and punished act as a deterrent (Gucciardi et al., 2011; Huybers & Mazanov, 2012; Mazanov & Huybers, 2010). However, Strelan and Boeckmann (2006) found that drug testing was less important to male Australian football and soccer players as a deterrence factor than their moral beliefs or the potential side-effects on health. Furthermore, Strelan and Boeckmann (2003) argued that an individual will be more likely to follow the law if he/she perceives the costs of breaking the law to outweigh the benefits: the “legal sanctions” (i.e. in a sporting context the ban from sport) were considered least effective, in particular when not accompanied by either “self-imposed sanctions” (like guilt) or “social sanctions” (disapproval from important others). Donovan et al. (2002) also argue that both normative (perception of legitimacy and morality) and instrumental (cost-benefit) perspectives matter for athletes’ compliance with anti-doping laws.

2.4. Personal moral values: anti-doping norms, no short cuts allowed and the feeling of guilt and shame

Bird and Wagner (1997) emphasise that anti-doping values and norms such as fair play can be a powerful means of combating doping. Athletes with strong “anti-doping norms” would object to having an unfair advantage through illegal performance-enhancing drugs (Eber, 2007). Hence, athletes’ thoughts about using doping themselves (and being caught) would be associated with shame. Fears of shame and guilt have also been found to be important deterrents among young British athletes (Bloodworth & McNamee, 2010). Moral considerations were evaluated as the most important (hypothetical) reason not to dope by Australian football and soccer players (Strelan & Boeckmann, 2006). However, Brissonneau (2010) found that, among road cyclists, moral values related to the use of performance-enhancing drugs and methods changed during different stages of their careers.

Moral values can be linked to (anti-doping) norms. However, dominant norms in sport can be interpreted both in favour of doping and against it. On the one hand (as described in Section 2.1), the norms or logics of elite sport may encourage doping even though doping breaches the basic rules of sport. On the other hand, as suggested by several authors, the dominant moral code among elite athletes can be characterised as being consistent with Weber’s “Protestant ethic” (Lüschen, 1967; Rasmussen, 2012). Central to this ethic are (among other things) goal orientation, rationalisation and a specific “work ethic” where rewards have to be earned through hard work, perseverance and self-discipline. Athletes who have internalised such a “no pain, no gain allowed” norm may see doping as a short cut (i.e. not having worked for success) and therefore find it unacceptable – like cheating.

2.5. Doping as a coping strategy to counteract unwanted (inherent) risks of elite sport: a tool to overcome critical events during the career of an elite athlete

Elite sport also incorporates a “culture of risk” (Bette, 2004): exposing the body to short-term health risks such as injuries or illness and possible long-term damage to the body is an integral part of the life of an elite athlete (Bette, 2004; Waddington & Smith, 2009; Young, 1993). Further, there is a risk of failure as a result of declining performance (Bette, 2004). These “risk situations” may encourage doping as a coping strategy to counteract such unwanted, inherent risks of elite sport (Bette, 2004). Thus, doping can be seen as a tool to overcome (or as a reaction to) critical events that athletes may experience during their career.

Studies have shown (or hypothesised) that athletes are most vulnerable to doping practices during transition phases in their sports career, such as from amateur to professional status (Houlihan, 2002; Lentillon-Kaestner & Carstairs, 2010), at stages where athletes evaluate their goals and decide on new strategies (Petroczi & Aidman, 2008), during periods of instability in an elite career like selection or de-selection to a team (Mazanov et al., 2011), when sponsorships are negotiated or at risk (Mazanov et al., 2011), after setbacks in their career because of injury or failure to perform in competitions (Kirby, Moran, & Guerin, 2011; Lentillon-Kaestner & Carstairs, 2010), when athletes want to continue competing at a high level within the sport or doping is perceived as necessary to maintain the lifestyle and to stay in sport (Bloodworth & McNamee, 2010; Kirby et al., 2011).

2.6. Contextual factors: sports culture, sports network and significant others

Some scholars point out that drugs are regarded quite differently by athletes in different sports (sub) cultures; what is a part of

the daily routine in one sports (sub) culture might be looked upon as morally wrong in other (sub) cultures (Smith et al., 2010). Further, when athletes become “socialized” to the norms and rules of a specific sports culture, the use of banned performance-enhancing substances or methods may not be perceived as cheating. For some, doping becomes a way to “do the job”, or it is seen as “just part of the job” of a professional athlete or as a tool to get to the next level or win (Brissonneau, 2010; Hamilton & Coyle, 2012).

Some scholars also highlight reference groups’ opinion (e.g. coaches, peers) and expected social sanctions or support as important factors in athletes’ decisions to dope or not to dope (Donovan et al., 2002; O’Donnell et al., 2006; Strelan & Boeckmann, 2003). Smith et al. (2010) found, for example, that athletes were strongly influenced by adult mentors during their sports careers; and their attitudes were influenced by different groups such as family, peers, teachers, coaches and sporting heroes. Similarly, Lentillon-Kaestner and Carstairs (2010) have demonstrated the importance of coaches and peers in the sports environment of young cyclists. However, a recent study found that the feeling of letting down family or friends or the fear of being shunned by peers in the sports environment were not great deterrents in decisions whether to dope or not, whereas public humiliation through the media were (Huybers & Mazanov, 2012).

2.7. The role of sports medicine in doping: the impact on health and the body

The protection of athletes’ health is one criterion (out of three) for including a substance or method in WADA’s “prohibited list” (WADC, 2009), and numerous studies have shown the various side-effects of (some) doping substances (e.g. Amsterdam, Opperhuizen, & Hartgens, 2010; Nikolopoulos, Spiliopoulou, & Theocharisa, 2010). Likewise, some substances may alter the body’s appearance, for example causing the masculinisation of female athletes using testosterone or growth hormone.

Empirical studies have shown that some athletes do not fear health damage or side-effects from doping (Kirby et al., 2011; Lentillon-Kaestner & Carstairs, 2010; Lentillon-Kaestner, Hagger, & Hardcastle, 2011). Athletes’ willingness to expose themselves to health risks in order to gain success has also been demonstrated by the “Goldman Dilemma”: 52% of the athletes surveyed stated that they would use a drug that would bring them an Olympic medal although it might kill them five years later (Goldman, Bush, & Klatz, 1984). This result, however, has not been replicated in later studies applying broadly similar dilemmas. These later studies show that athletes are not willing to run such a severe health risk to ensure victory (e.g. Bloodworth & McNamee, 2010; Bloodworth et al., 2010; Hanstad, 2006). A recent study by Connor, Woolf, and Mazanov (2013) tested the “Goldman dilemma,” and this study

found that only very few athletes were willing to sacrifice their lives to win an Olympic gold medal; however, if the drug use was not associated with a fatal condition (death in five years’ time) and no legal consequences would ensue, a considerable number of athletes would use illegal drugs to achieve an Olympic gold medal. Further, empirical studies have shown that elite athletes often regard health side effects from doping substances as deterrents (e.g. Mazanov & Huybers, 2010; Strelan & Boeckmann, 2006).

Depending on the situation and the type of medicine used, however, some substances or methods from the prohibited list may also help athletes regain health, for example after the extreme physical strain of training or competition (Møller, 2010). Furthermore, scholars argue that doctors have played a major role in athletes’ use of pharmacological products, including doping, and therefore it is necessary to understand the role of doctors in elite sports, their activities in the performance enhancement of athletes and the doctor-athlete relationship (Brissonneau, 2010; Hoberman, 2002; Waddington, 1996; Waddington & Smith, 2009). Athletes’ access to medical expertise may therefore have an impact on their use and misuse of pharmacological products. Qualified medical supervision would help reduce the side-effects of the substances, as well as reducing the risk of being tested positive.

3. Methods

3.1. Participants and procedure

The athletes in this study constitute a significant number of Danish elite athletes from 40 different sports. The athletes were either supported by Team Danmark (the Danish elite sport organisation) as members of a national team or a national team training squad, or – for a number of sports not supported by Team Danmark – identified by their sports federation as members of such a team or squad. The elite athletes were contacted by email at addresses provided by Team Danmark or by their federation. 645 elite athletes participated in the survey, giving a response rate of 43%. This answer rate is satisfactory, taking into account the mode of data collection, the busy lives of (and administrative burdens of some) elite athletes, the length of the questionnaire and the subject.

The participants were 380 male athletes (59%) and 265 female athletes (41%). Their mean age was 22.12 years. Sports were grouped according to the main physical demand of the sport: team sports (e.g. football and handball, 45%), speed and power sports (e.g. sprint and power lifting, 24%), endurance sports (e.g. swimming and cycling, 19%) and motor skill sports (e.g. sailing and golf, 12%) – broadly similar to the categorisation proposed by Alaranta et al. (2006) (see Table 2). Of the participants, 73% were supported by the Team Danmark programme, and among these 14% were “world-class athletes” (ranked 8 or higher at the

Table 2
Gender, age and sport type of participants. Percentages.

| | Total | Sport type | | | |
|---|---------|-------------|------------------------|------------------|--------------------|
| | | Team sports | Speed and power sports | Endurance sports | Motor skill sports |
| Sport type ^a | N = 645 | 45% | 24% | 19% | 12% |
| Gender ^b | | | | | |
| Male | 59% | 54% | 65% | 65% | 56% |
| Female | 41% | 46% | 36% | 35% | 44% |
| Age, mean | 22.12 | 21.35 | 22.68 | 21.99 | 24.13 |
| Athletes’ perception of the effect of doping in their sport | | | | | |
| Great effect | 48% | 43% | 42% | 81% | 26% |
| An effect (incl. great effect) ^c | 89% | 87% | 87% | 98% | 86% |

^a Differences in the distributions of gender within sport types were not significant ($p = .111$). Differences between mean age within sports type were found only between motor skills sport and team sports. Mean differences (2.78 [CI 95% .82–4.73] $p = .001$) (post hoc Bonferroni test).

^b Mean age was slightly lower among female athletes than male athletes. Mean difference (1.19 [CI 95% .27–2.10] $p = .011$).

^c An effect refers to the number of athletes who believe that doping has some effect in their sport. The figures thus include the answers “little effect”, “some effect” as well as “great effect”.

latest world championship or Olympic Games), 27% “elite athletes” (high-priority senior elite athletes of a high performance level) and 59% “Team Danmark athletes” (mostly upcoming talented athletes selected for a national junior-team squad and athletes just on the periphery of an elite senior national team) (Team Danmark, 2009). The remaining 27% were athletes from federations/teams not included in the Team Danmark support programme. These were all senior or junior national team athletes of a high performance level.

Overall, 28% of the participants have been competing at the elite level for more than nine years, 36% for between five and eight years and 36% for less than four years.¹ The majority of athletes believed that doping enhanced performance in their sport to some extent; however, endurance athletes more frequently considered doping to have a great effect in their sport (see Table 2).

Hence, one can argue that this group of study participants consists of athletes who may feel under pressure to dope or have an incentive to dope, or may potentially experience this in the future.

The Danish Research Ethics Committee confirmed before the data collection that the study adhered to national legislation concerning non-invasive studies on humans. Participants gave informed consent and were ensured of the confidentiality and anonymity of their responses. The participants were guaranteed that no questions would be asked about the actual use of doping and they could withdraw from the study without explanation at any time.

3.2. Measures

This article examines athletes’ responses to two hypothetical questions on reasons that may affect their considerations of whether to dope or not to dope. We first informed the participating athletes that the questions were hypothetical and that affirmative answers would not be interpreted as actual use of doping or as a concrete desire to engage in doping practices. We then asked athletes to imagine themselves in a situation in which they had to decide whether or not to dope. Subsequently athletes were asked whether or to what extent a number of reasons would affect firstly: their decision *not* to dope (deterrents; 29 items) and *secondly*: their wish to try doping (incentives; 25 items). We intentionally phrased the question addressing the motives/incentives for doping in rather vague terms, allowing athletes more freedom to agree to an influence. Possible answers were “no effect”, “some effect”, “great effect” and “I don’t know”, and – for the deterrence question only – an additional option was given: “I don’t think it will be like that”. This category was introduced to allow athletes to indicate if they found the deterrents “not plausible”, e.g. if the athlete would not expect him/herself to experience the listed deterrents, e.g. that their coach would *not* disapprove of the use of doping and/or to express disbelief in the listed deterrents, e.g. if they disagreed on the damaging effects of doping on health.

In addition, the athletes were given the opportunity to make comments or elaborate on their answers after each hypothetical question in an open-ended question. Some of these comments are used to qualify the discussion of the results.²

¹ The number of years at the elite level was calculated from the year the athlete was first selected to a national team training squad or an international competition by their federation.

² This article presents the results of 42 out of 54 items. Items were selected based on their ability to present the reader with the range of reasons for doping or not doping, while still setting a limit, in order to present a readable and well-arranged format. Some of the 54 items relate to the same phenomenon or measure different dimensions of it, e.g. variations of health considerations. Selection was also based on how well the item manages to measure our theoretical assumptions and whether the item provides particularly interesting perspectives. The potential deterrents and incentives most commonly said to have a “great effect” or “no effect” are presented.

This implies that our study does not measure actual use of doping but athletes’ deliberations about reasons that *would* affect their use of or their refraining from doping in the hypothetical situation.

The risk of “socially desirable” (and thus unreliable) responses is higher when asking sensitive questions about doping (Gucciardi, Jalleh, & Donovan, 2010; Petróczi & Haugen, 2012; Petróczi & Naughton, 2011; Pitsch & Emrich, 2012; Uvacsek et al., 2011), but this risk may be decreased when questions are asked indirectly (Tourangeau & Yan, 2007). Hence, hypothetical questions (as one type of indirect method) are common in both qualitative and quantitative studies on doping behaviour (e.g. Backhouse, Whitaker, & Petróczi, 2011; Bloodworth & McNamee, 2010; Bloodworth et al., 2010; Breivik, Hanstad, & Loland, 2009; Gilberg, Breivik, & Loland, 2006; Gucciardi et al., 2011; Huybers & Mazanov, 2012; Strelan & Boeckmann, 2006).

Researchers have adopted different approaches of asking athletes hypothetical questions in order to get insights into athletes’ considerations of the factors (and their relations) that may influence a decision to use illegal performance-enhancing drugs in sport and to address the problem of socially desirable answers. One example is the study of Huybers and Mazanov (2012), who decreased the risk of socially desirable answers by asking the respondents about the deliberations of a constructed, gender neutral and hypothetical athlete “Kim” at the same level and stage of career as the respondent. This study used an empirical discrete choice model based on a list of costs and benefits derived from interviews with elite athletes and support personnel (Mazanov & Huybers, 2010). A further example is the study of Strelan and Boeckmann (2006), who asked athletes to consider the (imagined) situation of a serious injury and the potential use of Human Growth Hormone (HGH) and then measured the athletes’ considerations before and after they were given the information that no test for HGH (yet) existed. In line with this, Gucciardi et al. (2010) asked athletes to consider their reaction to the (hypothetical) situation in which the use of a non-detectable, banned PED was provided under medical supervision. We also asked athletes to consider an imagined situation. We likewise used the hypothetical approach to create an environment for participants in which they could feel more secure when answering questions which could be perceived as sensitive because doping is legally and often morally wrong. However, even though the hypothetical approach can be perceived as safer, there is still the risk of socially desirable answers. One of our strategies to decrease this risk was to inform athletes about the aim of the questions, that questions were hypothetical and that answers would not be interpreted as actual use of doping or as a concrete desire to engage in doping.

Our study differs from previous studies by applying a different set of hypothetical questions and methodology, thus aiming (from another perspective) to provide further backing for empirical claims that a variety of different factors have an impact on athletes’ considerations of whether or not to use doping.

The items developed in this study – potential deterrents and potential incentives – were inspired by 28 semi-structured qualitative interviews with Danish elite athletes from swimming, cycling, team handball and badminton (previously conducted by the first author). The interviews provided not only the identification of specific reasons or conditions that athletes said would influence them but also inspiration for the exact phrasing of items (e.g. by using the words or conditions named by the athletes when considering reasons to dope or not). Furthermore, items were

However, to illustrate the multiplicity of deterrents and incentives (and the answer distribution) all 54 items are included in the beginning of the Sections 4.1 and 4.2. Items presented in Tables 1, 3 and 4 are the 42 items presented and discussed in the remaining parts of the article.

Table 3

Deterrents: athletes' reasons for deciding not to dope.

| Items ^a | Great effect (%) | Some effect (%) | No effect (%) | Gender | Age | Sports category |
|---|------------------|-----------------|---------------|--------|--------|-----------------|
| Banned from sport | 84 | 12 | 3 | .002** | .000** | .001** |
| Family/peers would disapprove of you | 79 | 13 | 7 | .289 | .982 | .343 |
| Coach/peers in the sport would disapprove of you | 75 | 17 | 8 | .316 | .140 | .226 |
| Unknown long-term side-effects | 72 | 21 | 7 | .091 | .594 | .306 |
| Guilty conscience | 72 | 20 | 8 | .000** | .066 | .262 |
| Doping is an unnatural way to enhance performance | 71 | 19 | 10 | .000** | .116 | .048* |
| Do not want to do anything illegal | 68 | 22 | 11 | .000** | .012** | .167 |
| Not able to enjoy good results | 68 | 22 | 10 | .004* | .138 | .001** |
| Fear of reduced fertility | 66 | 24 | 11 | .015** | .985 | .007** |
| Risk that suspicion would be cast on former results | 62 | 24 | 12 | .000** | .026* | .223 |
| Uncontrollable bodily changes | 63 | 27 | 10 | .001** | .048* | .018** |
| Risk of being exposed in the media | 59 | 28 | 14 | .033* | .671 | .597 |
| It would be embarrassing to be tested positive | 57 | 28 | 15 | .018** | .256 | .198 |
| Consequences for others if found out | 53 | 33 | 15 | .002** | .022* | .968 |
| Coach/experts disapprove of the use of the drug | 55 | 27 | 18 | .347 | .896 | .054 |
| Unfair to competitors who do not use doping | 52 | 27 | 21 | .001** | .136 | .008* |
| Afraid the body would become dependent on a drug | 42 | 37 | 21 | .003* | .000** | .043* |
| Financial consequences if found out | 45 | 31 | 24 | .132 | .001* | .021* |
| Hard to dope in your sport without being found out | 37 | 34 | 28 | .122 | .324 | .051 |
| Do not want the great PE effect induced by a drug | 32 | 26 | 42 | .007* | .324 | .388 |
| Do not know how to procure the means/substances | 25 | 36 | 39 | .026* | .967 | .575 |

^a Items are shortened in this table. Missing values have been eliminated from the table; percentages of "I do not know" replies were between 2% and 14%.

* $p < .05$.

** $p < .01$.

inspired by empirical and theoretical research (as described in Section 2, see also Table 1).

3.3. Data analysis

Data was analysed using IBM statistical software SPSS20. Descriptive data are reported as frequencies and percentages. Bi- and multivariate nonparametric statistics were used to compare differences and associations between groups of athletes with regard to gender, age and sport type. Differences were assessed using chi-square test and gamma test (two-tailed) p values less than .05 were considered statistically significant.

4. Results

In this section we firstly present the results on reasons not to dope (deterrents) and secondly the results on athletes' reasons to wish to try doping (incentives).

4.1. Deterrents: athletes' reasons for deciding not to dope

4.1.1. A multiplicity of deterrents

We presented the participants with a selection of 29 potential reasons for deciding not to dope. Results showed that most of the reasons suggested had some or a great effect as deterrents for a majority of the participants. On average, the participants found 14 reasons out of the 29 potential reasons to have a great effect and seven reasons to have some effect. An average of five reasons were evaluated by participants as having no effect on their hypothetical decision not to dope. Participants did not know how an average of two reasons would affect their considerations, and on average they found less than two reasons implausible ("I don't think it will be like that"). Thus, the results confirm that multiple factors are included in athletes' considerations of reasons not to dope, and act as deterrents. In the following presentation of results 21 of the suggested reasons (items) are analysed and discussed (see Section 3 and Table 3).

4.1.2. The "implausible" reasons

If athletes find a reason implausible (i.e. answered: "I don't think it will be like that"), it may not work as a deterrent for them. It can,

however, shed light on (sub-) cultural norms or on the effect of anti-doping work. We found that 12% of the athletes disagreed that they did not want to achieve as great a performance-enhancing effect as some doping agents may give, i.e. they did want such a great effect induced by a drug. More noticeably, 10% disagreed that the effect of doping was not large enough to run the risk, and 8% did *not* find doping without getting caught difficult. Furthermore, 7% of the athletes disagreed that their family and/or circle of friends outside their sport would dissociate themselves from them (if caught doping). A small minority, 5% did not expect their coach or experts within the sport to disapprove of the use of doping. Likewise, 5% indicated that the coach or people within their sport (network) would not disapprove of the athlete as a person. Fewer, 2–5% of the athletes, did not believe they would experience the listed side-effects to doping (numbers not illustrated in any figure).

4.1.3. The most prevalent deterrents

The reason that most participants (84%) said would have a great effect on their considerations of whether or not to dope was the inability to continue their sporting career due to a penalty ("That you will be banned from your sport if you are caught") (see Table 3). Other top deterrents (great effect) were the anticipated condemnation by people in the social environment outside their sport (79%) and within their sport (75%); fear of side-effects such as unknown long-term side-effects (72%) or reduced fertility (66%); or personal (moral) considerations such as a guilty conscience (72%), believing doping to be an unnatural form of performance-enhancement (71%); fear of not being able to enjoy results (68%); and not wanting to do something illegal (68%).

Other deterrents were also rated highly, but with a larger share of "some effect". This applies to the fear of bodily dependency; the (perceived) "likelihood of getting caught"; consequences for others; financial consequences if caught; risking being exposed in the media; the embarrassment of being tested positive; coach/expert dissociation from doping; unfairness towards competitors; and uncontrollable changes in the body.

The deterrents that would have an effect on the fewest participants were: not wanting to archive the great performance-enhancing effect induced by a drug; and the lack of knowledge on procurement of the doping agent.

4.1.4. Deterrents: differences between groups of athletes

In the following the results are presented as differences in percentages of “great effect” between groups of athletes.

4.1.5. Gender and age

Female athletes found a higher number of reasons to affect their hypothetical decision *not* to dope than male athletes did; thus, females in general also more frequently judged single items to have an effect. Female athletes were deterred (great effect) more frequently than male athletes by the fear of having a guilty conscience (81% vs. 66%); by the unfairness towards competitors who do not dope (60% vs. 46%); by not wanting to do something that is illegal (77% vs. 61%); by being banned from sport (90% vs. 81%); by the risk that suspicion will be cast on former results (74% vs. 58%); by the belief that doping was an unnatural way to enhance performance (81% vs. 64%); by the fear of reduced fertility (73% vs. 61%); by the risk of being exposed in the media (63% vs. 55%); by the embarrassment of being tested positive (63% vs. 52%); by fear that the body would become dependent on a drug (49% vs. 38%); because they would not know how to procure the means/substances (29% vs. 23%); because they did not want to archive the great PE effect induced by a drug (40% vs. 34%); and because they feared not being able to enjoy their good results (73% vs. 64%).

In general, athletes younger than 20 years (male and female) were more frequently deterred by being banned from their sport, by fear of bodily dependency and by fear of the financial consequences if caught than athletes aged 20 years and older. Female athletes under the age of 20 were more frequently deterred than males of the same age by the fear of consequences for others if caught (66% vs. 50%) whereas female athletes aged 20 years or older were more frequently deterred than males of the same age by the fear of uncontrollable bodily changes (68% vs. 54%). The fear that suspicion will be cast on former results decreased with age of both genders. Further, male athletes younger than 20 years were more inclined to consider the illegal status of the drug to be a deterrent than male athletes older than 20 years (19% vs. 8%).

4.1.6. Sport types

Endurance sport (ES) athletes were less frequently deterred (great effect) by being banned from their sport and by the financial consequences if caught than athletes from speed and power sports (SPS), team sports (TS) and motor skill demanding sports (MS) (ES 72%/SPS 82%/MS 86%/TS 90% and ES 34%/SPS 41%/TS: 48%/MS 60% respectively).

On the other hand, athletes from endurance sports and from motor skill demanding sports were more likely to be deterred by the fear that they would be unable to enjoy their results (ES 81%/MSD 82%/SPS: 61%/TS 62%); by the belief that doping is an unnatural way to enhance performance (ES 80%/MS 78%/SPS 65%/TS: 68%); and by the unfairness towards competitors who do not dope (ES 63%/MS 65%/TS 46%/SPS: 47%). Further analysis, however, revealed that female team sport athletes were also more frequently deterred by the unfairness towards competitors and by the fear of consequences for others if caught than male TS athletes (63% vs. 34% and 61% vs. 45% respectively).

Fear of uncontrolled bodily changes was more common among female than male athletes from endurance sports (82% vs. 53%). Female athletes from endurance sports (77%) and team sports (78%) were more deterred by fear of reduced fertility than male athletes from the same sports (ES male 52%; TS male 71%). On the other hand, athletes from motor skill demanding sports more frequently feared bodily dependence on a drug (MS 49%/TS 45%/SPS 36%/ES 40%).

4.2. Incentives: athletes' reasons for wishing to try doping

4.2.1. A multiplicity of incentives

We presented the participants with a selection of 25 potential reasons for wishing (hypothetically) to try doping. On average, participants found 13 reasons that would have an effect on their wish (i.e. act as incentives): of these, participants judged six reasons to have a great effect and seven reasons to have some effect. On average, participants found an average of 11 reasons to have no effect on their wish to try doping. Participants on average answered “I don't know” to two reasons.

4.2.2. The most prevalent incentives

The situation that most athletes say would have a *great* effect on their hypothetical wish (motive) to try doping was if they were provided with qualified medical supervision (36%) (see Table 4). Other top incentives – rating almost as highly – were: if they were absolutely certain that no one would find out (35%); if doping would counteract damage on the body caused by training, competitions or injuries (34%); if doping would secure a faster return to sport after a long-standing injury (33%); if it was demanded of the athlete in order to continue practising the sport at an elite level (32%); if doping would ensure victory at the Olympics, the World Cup/Championship or another major competition/tournament (32%); or if it would give them financial security when their career ended (32%).

Other incentives with quite a large share of “some effect” were: if doping would secure a quicker return to sport after long-standing illness and if the coach or their social environment supported use.

The incentives that would have an effect on the fewest participants were: that the athletes had (already) optimised everything else related to their sport (e.g. training, diet, weight and recovery); that drugs were provided; that doping would counteract stagnation in their performance; that athletes meet new demands during career transitions; and that it would ensure a weight loss.

4.2.3. Incentives: differences between groups of athletes

In the following the results are presented as differences in percentages of “great effect” between groups of athletes.

4.2.4. Gender and age

Contrary to expectations, we found gender differences in only a few incentives – and differences were small: Male athletes more frequently stated they would be affected (great effect) by the potential of doping to secure an increase in muscle mass (24% vs. 14%) and by doping's potential to provide them with financial security for many years after they have ended their elite sports career (35% vs. 28%).

Male athletes aged 20 years and older were more likely to be curious about what the effect of doping is really like (27% vs. 16% of younger male athletes and 15% of female athletes of all ages). Female athletes aged 20 years and older, however, stated more frequently that they would be affected (great or some effect) by doping's potential to ensure a weight loss (38% compared with younger female athletes, 27%, and male athletes of all ages, 26%).

Athletes of both sexes aged 20 years or older found more frequently than younger athletes incentives to use drugs in order to reduce damage to the body (38% vs. 28%) or to ensure a faster return from illness (30% vs. 24%); and also if all legal performance-enhancing strategies had already been tried (24% vs. 13%); if stagnation in performance was experienced over a long period of time (17% vs. 9%); and if the drug was provided (17% vs. 11%).

4.2.5. Sport types

Team sport (TS) and speed and power sport (SPS) athletes would be affected more frequently than athletes from endurance sports

Table 4
Incentives: athletes' reasons for wishing to try doping.

| Items ^a | Great effect (%) | Some effect (%) | No effect (%) | Gender | Age | Sports category |
|---|------------------|-----------------|---------------|-------------------|-------------------|---------------------|
| Qualified medical supervision | 36 | 29 | 35 | .438 | .109 | .047* |
| 100% sure that you will not be found out | 35 | 26 | 39 | .801 | .260 | .140 |
| That the substance may reduce the damage to the body caused by training, competitions or injuries | 34 | 33 | 33 | .077 | .010 [†] | .004* |
| Faster return to sport after long-lasting injury | 33 | 34 | 33 | .150 | .052 | .325 |
| Necessity to continue to compete at elite level | 32 | 32 | 36 | .277 | .723 | .000** |
| Financially secured after career | 32 | 26 | 42 | .010 [†] | .090 | .071 |
| Ensure you a victory at Olympics or other major competitions | 32 | 28 | 40 | .448 | .073 | .025* |
| That it would give you the last push towards top results | 31 | 28 | 41 | .795 | .452 | .009* |
| Not selected for doping control | 31 | 29 | 39 | .465 | .487 | .109 |
| Faster return after illness | 28 | 36 | 36 | .631 | .028 [†] | .539 |
| Coach supports use | 24 | 35 | 41 | .073 | .689 | .067 |
| Social environment supports use | 22 | 33 | 45 | .148 | .115 | .011* |
| Ensure a gain in muscle mass | 20 | 33 | 47 | .004** | .242 | .000** |
| Interesting to experience the effect | 20 | 29 | 51 | .037 [†] | .005** | .047* |
| Already done everything else to enhance performance | 19 | 27 | 53 | .102 | .024 [†] | .030* |
| Increase self-confidence/trust in one's own abilities | 19 | 31 | 50 | .256 | .197 | .508 |
| Competitors have started to use doping | 17 | 37 | 46 | .785 | .220 | .106 |
| The drugs are provided/made accessible | 14 | 34 | 52 | .683 | .024 [†] | .237 |
| Stagnation in performance level for a long period of time | 14 | 31 | 56 | .759 | .024 [†] | .037 ^{†,b} |
| Meeting new demands during career transitions, e.g. from amateur to professional | 13 | 30 | 57 | .617 | .735 | .007* |
| Ensure weight loss | 11 | 18 | 71 | .119 | .014 [†] | .635 |

^a Items are shortened in this table. Missing values have been eliminated from the table; percentages of "I do not know" replies were between 4% and 11%.

^b Chi less than 5 counts.

* $p < .05$.

** $p < .01$.

(ES) and motor skill demanding sport (MS) if doping became necessary to continue sport at an elite level (TS 36%/SPS 35%/ES 25%/MS 21%); if doping ensured medals at the Olympics or other major competitions (TS 36%/SP 37%/ES 25%/MS 22%); if the substance ensured the last push towards top results such as when having qualified for finals or with the prospect of a medal instead of coming fourth (TS 37%/SPS 32%/ES 22%/MS 24%); if the athlete had already tried all other possibilities to enhance performance (TS 22%/SPS 23%/ES 13%/MS 13%); if it ensured an increase in muscle mass (TS 26%/SPS 21%/ES 10%/MS 11%); and if the substance reduced bodily damage caused by elite sport (TS 38%/SPS 38%/ES 23%/MS 24%).

Team sport athletes also found more frequently a guarantee of qualified medical supervision to be an incentive (TS 43%/SP 32%/ES 31%/MS 25%) whereas endurance sport athletes more frequently found that it could be interesting to experience the effect of doping (ES 30%/SPS 21%/TS 17%/MS 11%). Athletes from motor skill demanding sports were less likely to find a supportive social environment to be an incentive (MS 13%/ES 26%/TS 24%/SPS 21%). Almost equal numbers (between 10% and 15%) from all four sport types imagined a great effect from challenges during elite career transitions, e.g. from amateur to professional. More team sport athletes, however, found it to have some effect (TS 37%/SPS 29%/ES 23%/MS 18%).

5. Discussion

The results of this study show that, when confronted with a hypothetical decision to dope or not to dope, athletes consider multiple reasons or circumstances to have an effect on their considerations: on average, most of the potential *deterrents* and half the potential *incentives* that we proposed had an effect on the athletes surveyed (although to varying degrees). Both deterrents and incentives included personal, emotional, situational and social circumstances.

Our findings concur with those of Mazanov and Huybers (2010) and Huybers and Mazanov (2012), who likewise found combinations of different circumstances to have an effect. Our findings also support the idea from PEDM models that it is necessary to

consider multiple factors when approaching doping in sport (e.g. Donovan et al., 2002; O'Donnell et al., 2006; Petroczi & Aidman, 2008; Strelan & Boeckmann, 2003). Our results show that fewer incentives than deterrents would have an effect on athletes' decisions about doping. This, however, does not necessarily mean that deterrents are stronger than incentives. In our analysis a comparison of the strength of deterrents and incentives, as well as any trade-offs between these, is not possible.

Noticeably, a relatively high number of athletes think that various reasons would have an effect on their hypothetical wish to try doping. Although this does not translate into the athletes actually doping or having a concrete plan to dope, it indicates that the athletes went along with the questions about their hypothetical considerations of doping and were able to relate to the reasons suggested for doping – even though doping is a very sensitive issue (in particular in Denmark, as mentioned in Section 1).

In the following we will present quotes from the answers to open-ended questions in order to specify relevant perspectives and corroborate the discussion of results presented in Section 4.

5.1. Doping as an (inherent) logic of sport: the urge to win and break records – and its increase with the commercialisation of sport

Our results show that almost one third of athletes regard winning a gold medal at the Olympics or just getting a last push towards top results as a great incentive, especially TS and SPS athletes. We would, however, have expected more athletes to "confirm" that top results were a great incentive (compared with other incentives presented in our study) because other studies identified "winning" as a major motive for doping (e.g. Ehrnborg & Rosén, 2009; Laure & Reinsberger, 1995; Mazanov & Huybers, 2010; Scarpino et al., 1990; Striegel et al., 2002), and this urge to win and break records is considered to be a logic inherent in sport (Christiansen, 2007; Heikkala, 1993; Møller, 1999). We can assume that in our study other factors, in particular deterrents such as the fear of being banned from sport (Section 5.3), personal moral values (Section 5.4), social sanctions (Section 5.6) or effects on health/side-effects (Section 5.7) may overshadow the desire for sporting success.

Fear of financial consequences if caught had a greater effect among young athletes although, on the whole, few athletes saw this as an effective deterrent. On the other hand, financial security *after the end of a sporting career* was often seen as an incentive by all groups of athletes – but slightly more frequently among male athletes. The importance of the financial benefits of doping was elaborated upon by one male athlete:

...if I could score the big contract in (...) that could almost secure my future, there would be no doubt I would do it [dope]" (male athlete, speed and power sport).

This, however, is not the case in all sports. In some sports financial benefits do not always follow great results:

There is no money in my sport. The sport is not important enough for me personally and financially to influence a decision to dope. In some countries doping and better results can result in a better quality of life. This influences these athletes' attitudes to doping (male athlete, speed and power sport).

Further, the need for financial security is (sometimes) less important when living in the Danish welfare state whereas the financial benefits of doping may make a significant difference to the quality of life of athletes from poorer countries.

5.1.1. The effect of doping

The analysis of doping as an inherent logic of sport is only applicable if athletes expect doping to increase performance levels in their sport. Therefore, it is relevant to consider athletes' perceptions of the effect of doping. As mentioned in Section 1, athletes' perceptions of the effect of doping on performance in their sport can influence their perceptions of incentives and deterrents. We found that the majority of athletes from all sports types did expect doping to have *some* effect, although endurance sport athletes more frequently judged doping to have a *great* effect on performance. The importance of athletes' perceptions of the effect of doping was elaborated upon by several athletes, for example:

I would never consider using doping because I don't think it would make any difference in my sport. How I would feel if I was doing another sport is difficult to say (male athlete, team sport).

Contrary to expectations, there was a tendency towards endurance sport athletes considering fewer reasons to be great incentives for them, but – as expected – athletes from motor skill sports likewise found fewer reasons to be incentives compared with team sport athletes and speed and power sport athletes (a possible explanation of this result will be elaborated on in Section 5.2). Our results also confirm that athletes from different sport types answer differently when asked about specific effects of doping on the body, e.g. gaining muscle mass or losing weight. Differences in specific effects on the body might be explained by the different demands of the type of sport (Alaranta et al., 2006; Loland, 2004) and the different needs of individual athletes: for instance not all athletes would benefit from losing weight or gaining muscle mass. As expected, male athletes – especially from team sports and speed and power sports – were more likely to consider an increase in muscle mass to be an incentive.³ However, it was unexpected to find differences with regard to loss of weight *only* between females aged 20 years and older and the rest of the athletes. Based on the results of other studies, we assumed to find a gender difference between young female and young male athletes since several studies showed

³ This could be explained by the positive correlation between increased muscle mass and power output/strength (hence, acceleration and speed, but also gain in body weight) that would be particularly beneficial in these types of sport.

(or hypothesised) that female athletes strive for slimness and male athletes for muscle gain (e.g. Grogan, 1999; Pedersen, 2010). However, our result might be explained by the fact that elite athletes tend not to have gender-stereotyped body images (compared with the general population); both male and female elite athletes train and thus shape their bodies to perform optimally for their sport. In some sports and for some athletes this means losing weight, in others gaining muscle mass or weight, and this is true regardless of the gender of the athlete.

One argument related to the effect of doping is that it could be interesting to experience what the effect of doping is really like. This interest in trying out doping has often been mentioned by elite athletes in interviews (conducted previously by the first author) and was not associated with striving towards top results or counter-acting critical events but merely expressed as curiosity about the personal experience of finding out to what extent doping could enhance their performance. In our survey this particular curiosity was more often expressed by male athletes of 20 years and older from endurance sports.

5.2. Doping as a reaction to competitors' use of doping: a game theoretical approach

Contrary to a game theoretical assumption (cf. Section 2.2), we found that athletes' knowledge that competitors had started doping had a great effect on only a minority of elite athletes (17%), and almost half of the athletes did not consider this to be an incentive at all. Considering the competitive nature of elite sport, it might be expected that athletes would react to other competitors' starting to dope in order to retain their leading position in their sport. Such a reaction was found in the study undertaken by Kirby et al. (2011). Contrary to our expectations, we did not find any significant differences between athletes from different sport types here, either. We would have expected endurance athletes, who in our study more often judged doping to have a great effect, to react to this dilemma and regard the situation as an incentive whereas it could be assumed that athletes from motor skill sports were less likely to react due to the lower perceived effect of doping on performance in their sport.

A possible explanation for this relatively low-level reaction from endurance sports athletes might be that some endurance athletes are already facing this doping dilemma today and that some of these athletes have made up their minds and chosen not to react to the (suspected) use of doping by competitors. As expressed by a female endurance athlete in the following open-ended question:

The "big countries" are ahead in research and [athletes] take something that the tests cannot trace yet. I think doping is wrong and I would not take it even though I know it is a necessity in order to beat the best [performing] of my competitors (female athlete, endurance sport).

If (in a game theory approach) we take into consideration the role of fair play norms as suggested by Eber (2007) and the four player types, Coubertinian, Naessian, Lombardian and Machiavellian as suggested by Tangen and Breivik (2001), we may have a possible explanation for why our results deviate from our expectations. Namely, the character of "the game" has been altered by having a high proportion of the fairness-oriented, "Coubertinian" player type in our study, a player type with a focus on fairness and health – which are also the general anti-doping values and arguments for a doping ban: i.e. doping as cheating and a health risk. Such athletes would be less likely to be affected by other athletes' doping than athletes not sharing these values. This is consistent with our findings in other parts of the study that the majority of athletes (especially female athletes) perceived health, personal moral values and fairness towards competitors (who do not dope) to some

extent as influencing their decision not to dope (see Sections 5.3, 5.4 and 5.6). This explanation is further supported by athletes' comments in our questionnaire, for instance this (Coubertinian) view:

My approach to my sport is based on honesty to myself and others. I do not wish under any circumstances to cheat others or expose myself to unknown side-effects (female athlete, endurance sport).

The presence of "process-orientated" (Naessian) player types could also explain the low-level reaction to competitors' doping. These player types regard the process (and not results) as the most important element and would always choose a no-doping strategy (Breivik, 1992). Process-orientated athletes seem to be present in our study as well (indications of this are found in Sections 5.1, 5.3 and 5.4); nevertheless, we would expect process-orientated elite athletes, too, to aim for top results. However, doping as a reaction to a perceived doping dilemma (because the majority of competitors dope) and as the last resort was (also) emphasised by a male endurance athlete in an open ended question in our survey:

If I did it [used doping], then it would be because it was the last way out [solution] in order to reach the goal. But at the same time also with the assurance that it would be accurately monitored and with the knowledge that the majority of the competitors also used it (male athlete, endurance sport).

On the other hand, when we presented the dilemma more explicitly; if doping became a necessity in order to continue to compete at an elite level, a large number of athletes perceived this situation as an incentive to dope. This dilemma was judged to have an effect by all groups of athletes, although slightly fewer athletes from endurance and motor skills sports regarded this as an incentive. This is consistent with the findings of Kirby et al. (2011) and Bloodworth and McNamee (2010), who found that the perception that doping was necessary to maintain one's lifestyle or to stay in the sport increased athletes' willingness to dope.

5.3. Ban from sport and the perceived likelihood of being caught: effects of anti-doping regulations

Our results show that a ban from their sport (if they are caught doping) is an important deterrent for the majority of athletes. Male athletes, however, regarded the ban as being of less importance than female athletes although the fear of a ban decreases with age for both genders. The decrease in the deterrent effect of the ban with age may be explained by the numbers of years left in sport. Younger athletes still have their entire career ahead of them; hence, the consequences of being banned from sport could be perceived as being a greater deterrent than athletes towards the end of their athletic career. However, an explanation might also be that older athletes have experienced, or are aware of the fact, that some athletes dope and avoid testing positive (see, for example, Hamilton & Coyle, 2012; USADA, 2012). Such knowledge may decrease the deterrent effect of the ban.

Studies using samples comprising male athletes only showed that the athletes considered the fear of being caught to be less important for the hypothetical decision to dope than health and moral reasons (Strelnan & Boeckmann, 2006); and among male athletes who admitted to using doping the fear of being caught had initially not been a worry (Kirby et al., 2011). This could indicate that many male athletes often take other factors into consideration than the ban from sport; however, it does not tell us anything about gender differences as both studies only deal with male athletes.

The gender differences might be explained by the different ways in which men and women evaluate the severity of the negative consequences of risk behaviour. Harris, Jenkins, and Glaser (2006)

found that women more frequently expected negative outcomes and had a lower expectation of enjoyment when engaging in risk behaviour than men. Further, a review study based on 150 articles dealing with male and female risk-taking behaviour found that, in 14 out of the 16 measured types of risk-taking behaviour, males were more likely to expose themselves to risk; however, the gender gap seems to decrease with age (Byrne, Miller, & Schafer, 1999). Our results confirm a decrease in the gender gap with age; however, our study cannot be translated into an actual risk behaviour study.

Although gender differences were found, the majority of male athletes also consider a ban from sport to be a deterrent. The consequences of a ban were pointed out by a male athlete:

Doping would have a great impact [on performance level] but as an amateur athlete it would be difficult to be away from the sport for two years in this country and you cannot return to the sport because everyone knows you. . . (male athlete, speed and power sport).

On the other hand, the influence of a ban on athletes' decisions may be more clearly seen in situations where legal sanctions are not present. We found that situations in which legal sanctions would (most likely) not ensue, such as when athletes are certain they will not be caught (e.g. when using non-detectable drugs) or will not be tested were perceived to have an influence as an incentive by about two-thirds of the participants.

Contrary to our expectations, we found no differences between groups of athletes in this respect. Gender differences would have been expected when one considers the differences between male and female athletes with regard to anti-doping norms (see Section 5.4) and fear of side-effects (see Section 5.7). Hence, our results show that a ban from sport acts as a deterrent for rather a large group of athletes, and the absence of punishment (i.e. the certainty of not being caught) is perceived as facilitating the use of doping. Consequently, our results corroborate the findings of Mazanov and Huybers (2010) that athletes' perceived likelihood of being caught and punished has an effect on athletes' decisions on whether or not to dope. Noteworthy is the number of athletes in our study who (though a minority) indicate that they would not find it difficult to dope without being caught or that the effect might be worth the risk. It must be assumed that this group is not greatly deterred by current anti-doping efforts.

Our results showed that the perception of doping as an illegal act in elite sport – as a reason for refraining from doping – differed between groups. Male athletes above 20 years of age were less likely to consider illegality as a deterrent than female and younger male athletes. This result concurs with a French study conducted by Brissonneau (2010) which found that the moral attitudes of male road cyclists changed during their sporting careers. Gender differences are expected because of the higher likelihood of men to engage in risk behaviour than women (Byrne et al., 1999; Harris et al., 2006). Furthermore, the fact that men are more likely than women to (actually) disobey the law can be confirmed by criminal statistics in society generally: in 2010 almost 80% of all criminal acts in Denmark involved men; however, the proportion of violations of the law by women is increasing (Statistic Denmark, 2012).

Obedying the rules/laws may be attributable to various reasons; for some athletes it may be based more on mere compliance rather than moral considerations (see Donovan et al., 2002). Our results might indicate that some athletes' decisions to obey the law today may be viewed as compliance with the rules/laws. If so, compliance with the rules for these athletes probably has to be understood in connection with the willingness to run risks or other fears arising from doping, e.g. the perceived likelihood of being caught, the severity of the punishment, health and side-effects or other

consequences. An athlete's compliance-orientated behaviour can be seen as merely following the current version of WADA's prohibited list, as reflected in the comment of a male athlete in our study:

It is solely the law/list of prohibited substances that determines it (male athlete, speed and power sport).

5.4. Personal moral values: anti-doping norms, no short cuts allowed and the feeling of guilt and shame

Donovan et al. (2002) suggest a normative approach to why athletes comply with anti-doping rules, i.e. that athletes are more likely to comply with rules if rules are considered legitimate (as "just laws") and "the right thing to do" (personal morality). In our study moral values were associated with anti-doping norms; the general orientation that doping was wrong; a guilty conscience; fear that suspicion might be cast on previous results; and that it would be embarrassing to be tested positive. These deterrents were judged to be of importance in deciding *not* to dope for the great majority of athletes, in particular female athletes. Female athletes (especially from TS) were also more likely to express fair-play norms, e.g. to consider that doping might have consequences for others (as a reason for refraining from doping) and to express the belief that their own use of doping would be unfair towards competitors that do not dope. These findings are in agreement with those of Bloodworth and McNamee (2010), who showed that guilt and shame were considered an important argument against doping among young British athletes. Fear of suspicion and shame if caught doping were elaborated on by a male athlete in our study:

My greatest fear when caught using doping would be to be denounced as a cheat and that my previous results would not be recognized (male athlete, team sport).

Anti-doping norms as an important deterrent are in agreement with suggestions put forward by Bird and Wagner (1997) and Eber (2007). This does concur with the findings of Kirby et al. (2011), who found that the norms athletes who admitted to doping did not comply with current anti-doping norms and that most of these athletes did not perceive their use of doping to be wrong. Nevertheless, this study found ambivalent views on this matter since the feeling of shame was strong among athletes who had used doping. Hence, both studies confirm that (anti-doping) norms have an influence on athletes' doping.

5.4.1. "No pain, no gain (allowed)" – results have to be earned through hard work

The views that results must be achieved through hard work and that no short cuts are allowed are in line with anti-doping norms and values. We found that the fear of not being able to enjoy good results if they were based on doping was most common among female athletes and endurance athletes of both genders. A similar deterrent among athletes was the view that they would not want to achieve such a great performance-enhancing effect induced by a drug (i.e. an effect that has not been worked for); in our study male athletes aged 20 years and older were less likely to consider this a deterrent. The above-mentioned reasons can be interpreted as complying with a specific moral value system, a "Protestant moral ethic", prescribing that rewards have to be earned through hard work, perseverance and self-discipline (Lüschen, 1967; Rasmussen, 2012). Hence, the norms dictate that an athlete should only enjoy a victory that has been worked for – no short cuts are allowed.

By analogy, a further reason that influenced many athletes in our study was that they did not want to engage in doping practices until they had done everything possible and had already worked hard to enhance performance in all other areas like training, diet and sleep.

This is similar (but not identical) to the condition set by a value statement issued by the elite organisation Team Danmark and the Danish Sport Association (Team Danmark & DIF, 2008) declaring that they do *not* support the use of several legal performance-enhancing means (like bicarbonate and altitude chambers) unless elite athletes have already optimised their performance in all other areas and, furthermore, that they only support the use of such means by top athletes. Though these ethical guidelines have no legal validity, they are passed on to the national coaches and other experts supervising elite athletes, thus (potentially) issuing directives on the use of performance-enhancing drugs and methods in the sports environment – and thus for the respondents of our study – by prescribing how performance should (not) be altered.

5.5. Doping as a coping strategy to counteract unwanted (inherent) risks of elite sport: a tool to overcome critical events during the career of an elite athlete

We found that the majority of athletes, especially older athletes, took into account specific "setback" situations like injury and illness and considered a faster return to sport from such situations to be an important motive for trying out doping. This is consistent with the findings of other studies which suggest that injury or other setbacks are critical situations that (may) act as triggers for athletes to engage in doping practices (e.g. Bloodworth & McNamee, 2010; Kirby et al., 2011; Lentillon-Kaestner & Carstairs, 2010; Mazanov et al., 2010, 2011; Strelan & Boeckmann, 2006). There are several possible explanations for these results/reactions on the part of athletes. One interpretation might be that, in a situation in which an athlete suffers a setback, doping is regarded less as a matter of cheating since the aim is the re-stabilisation of performance – returning faster to previous levels of performance and not enhancing performance per se. Another interpretation is the perception that a setback is unfair, and therefore doping is considered "justified" to offset such an unfair situation. In cases of injury and illness doping substances may also be perceived as the enhancement of health and not as performance enhancement as such. Further, the high risk of injury and the extreme pressures on the body can be seen as some of the many risks inherent in the cultures of elite sport (Bette, 2004; Young, 1993); from this point of view, doping would be an expected coping strategy to deal with these "critical events" or obstacles in an athlete's sporting career (Bette, 2004). However, other threats to a sporting career, such as stagnation in an athlete's performance level over a long period of time or meeting new demands during career transitions (e.g. from amateur to professional), were less frequently regarded as an incentive by all groups of athletes, although more athletes of 20 years and older seemed to be aware of these situations. An explanation for this could be that these critical events are part of the career path of an elite athlete – sooner or later performance will stagnate or decrease, and all athletes will face transitions during elite careers. Thus, doping as a coping strategy to overcome such predictable obstacles might be less legitimate for athletes; nevertheless, engaging in doping practices to cope with these unwanted situations would be expected to increase with age, with athletes' personal experience of such obstacles/challenges.

5.6. Contextual factors: sports culture, sports networks and significant others

Our results confirm the existence among athletes of quite a dominant fear of social consequences or sanctions. We found that if doping use resulted in disapproval of the athlete (as a person) by people inside and outside the sports environment; this would act as a great deterrent for the majority of athletes from all groups. The converse situation, i.e. when the use of doping is supported by the

social environment, does not act to the same extent as an incentive to athletes' hypothetical wish to try doping. Thus, our results confirm that it is necessary to consider athletes' perceptions of social consequences of a decision to dope; this influence of perceived social consequences has been integrated into several PEDM models (Donovan et al., 2002; O'Donnell et al., 2006; Petroczi & Aidman, 2008; Strelan & Boeckmann, 2003). Our results also suggest that athletes evaluated the various types of social consequences differently; however (in our study) the different groups of athletes did not differ in their perception of the same type of social sanction (e.g. disapproval by coach/experts). To some degree our results confirm the findings of Huybers and Mazanov (2012); the fear of public humiliation through exposure in the media was regarded as a great deterrent, especially among the female athletes in our study. However, the hypothesis that, for a large group of athletes, the fear of social sanctions on the part of the athletes' sporting environment and family would act as a greater deterrent than the fear of exposure in the media was not supported by Huybers and Mazanov's findings.

However, social consequences would not arise if doping were accepted in the sports environment (Brissonneau, 2010; Hamilton & Coyle, 2012). Only a minority of athletes in our study indicated that they would expect to be able to use illegal substances without social sanctions from people in their sports environment (such as their coach or experts or their family and/or circle of friends outside their sport); and only a very small number reported that they would not expect their coach or experts to disapprove of the use of doping substances.

Accessibility to doping substances and/or practices was, in general, judged to have a little effect both as a deterrent (as in the item "that you don't know how to procure the means/substances") and as an incentive (as in the item "that the drugs are provided/accessible"). However, we would expect athletes' evaluations of the effect of "accessibility to doping" to be particularly difficult to answer by those athletes who have never been directly confronted with doping. Noteworthy, though, is that the incentive that has an effect on most athletes, namely if "qualified medical supervision" is ensured, also involves a kind of accessibility – namely access to doping through the services of a qualified medical doctor.

5.7. The role of sports medicine in doping: the impact on health and the body

The results of this study show that reasons related to maintaining health or reducing health risks seem to be valued by all athletes as quite important components in the "decision matrix" in the (hypothetical) decision whether or not to dope. Qualified medical supervision was judged to be the most important incentive by all groups of athletes, but in particular team sports athletes. Thus, our results confirm the role of sports physicians' potential influence on athletes' doping (Hoberman, 2002; Waddington, 1996; Waddington & Smith, 2009). Taking into account the impact of commercial and political interests in elite sports, as well as the obligations of (employed) team doctors (Waddington, 1996), who do not always value athletes' health above the ability to perform well (Murphy & Waddington, 2007), our results suggest that in our study particular team sports athletes are at risk if they get into the hands of the "wrong" doctor.

The impact of team doctors and other health care professionals on athletes' cheating was also observable in the "bloodgate" affair involving the Harlekin rugby team (see Holm & McNamee, 2009); and the pivotal role of doctors in assisting and "feeding" athletes' doping has recently been documented (e.g. Hamilton & Coyle, 2012; Korn & Robeck, 2013; The Fuentes Case; USADA, 2012). Doctors have several motives for getting involved with doping (Korn &

Robeck, 2013); however, if one is to understand the important role of doctors, one must also consider the challenges and dilemmas in the interaction between doctors and elite athletes as well as sports teams. Conflicting interests and norms arise which often do not involve care for athletes' health: for example, in the case of athletes who are not willing to play hurt and who are thus labelled players with a non-professional attitude (Roderick, 2006); or in the case of doctors who avoid telling an athlete about a severe health condition or who breach medical confidentiality by passing on information to managers (Murphy & Waddington, 2007; Waddington & Roderick, 2002). Furthermore, one must keep in mind that today's sports medicine is not only concerned with restoring athletes' health, along with supervising prevention and rehabilitation measures, but also with the enhancement of athletic performance (Heggie, 2011); and sometimes "... the difference between best practice, malpractice, and illegal practice is small" (Tscholl, Feddermann, Junge, & Dvorak, 2009, p. 260). One example of a potential grey zone is when Therapeutic Use Exemptions (TUEs) are granted in elite sport (see Overbye & Wagner, 2013). At the same time, doctors' authority, as well as their access to medicines, poses an additional risk as in many cases athletes would consider doctors' advice to be qualified guidance of their use of medicines. However, the conflicts between expectations and the duties of doctors may also involve ethical challenges or dilemmas for doctors (Holm, McNamee, & Pigozzi, 2011). An example of this is the situation in which doctors become aware of an athlete using doping; according to the 2009 WADA Code (WADC, 2009, Article 2.8.) doctors risk exclusion from working with athletes if they cover up an athlete's use of prohibited substances or methods. However, if making this public they commit a breach of confidentiality in their professional/legal duties (McNamee & Phillips, 2011).

That doping substances might reduce damage to the body caused by training, competitions or injuries was an incentive especially for athletes above 20 years of age from team sports as well as from speed and power sports. An explanation of the difference here between age groups might be that older athletes are more likely to have already experienced damage to the body after competing at a high performance level for many years; in addition, the motive to compensate for impairment to one's health or damage to one's body might be more plausible than the motive to dope in order to improve performance and to win (as described in Section 5.5).

In our study very few athletes believed that the listed side-effects would not occur. Although some athletes considered side-effects to be an outcome of doping, they did not personally find that side-effects would affect their (hypothetical) decision *not* to dope. Yet, a majority regarded possible physical and psychological side-effects (such as reduced fertility or uncontrollable bodily changes, as well as bodily dependence on a substance) as great deterrents, and this was especially the case among the female athletes. This gender difference might partly be explained by the different effects of some doping substances on male and female bodies – above all in bodily appearance. The gender difference may also be explained by differences between male and female evaluations of health risks or their willingness to engage in behaviour that causes health risks like drinking or drug use (Byrne et al., 1999; Harris et al., 2006).

Despite some gender differences our results suggest that the majority of athletes would worry about the (severe) health risks incurred by doping. That athletes are (hypothetically) unwilling to run severe health risks has been found in other studies (e.g. Bloodworth & McNamee, 2010; Bloodworth et al., 2010; Hanstad, 2006); so, too, the assumption that they considered the side-effects of doping substances to be an important factor in the decision not to dope (Bloodworth & McNamee, 2010; Mazanov & Huybers, 2010). However, these findings, i.e. that athletes take into consideration potential side effects and regard these as an important deterrent,

differ from those of Kirby et al. (2011) and Lentillon-Kaestner et al. (2011), who found that health damage was rarely considered in the initial phase of doping use, and our results contradicts the findings of Goldman et al. (1984). The study undertaken by Goldman et al. (1984) showed that half the athletes surveyed were willing (hypothetically) to run severe health risks including a significant reduction of lifespan if ensured of winning an Olympic gold medal. Even though Goldman's study has been criticised, among other things for being "too unreal to take seriously" (Beamish & Ritchie, 2005, p. 413), results from later studies applying similar dilemmas suggest that nowadays athletes, even in this "unrealistic" situation, would not want to be exposed to such a severe health risk in order to achieve sporting success (e.g. Bloodworth & McNamee, 2010; Bloodworth et al., 2010; Connor et al., 2013; Hanstad, 2006). For instance, only four (male) athletes out of 392 stated that they would probably use a hypothetical substance that was completely undetectable and would significantly increase performance if the drug reduced their lifespan by ten years (Bloodworth et al., 2010). This result was confirmed by a recent study in which the "Goldman dilemma," as well as different versions and modes of presentation of the dilemma, was applied and subsequently tested on 212 Canadian elite track-and-field athletes. Only two athletes (1%) were willing to accept the dilemma. Although the legality of the method changed the acceptance rate, only few athletes (6%) would be willing to accept the fatal consequences as trade-off for success when the drug was legal. Interestingly, almost 12% of the athletes would use an undetectable, illegal performance-enhancing substance if this had no effect on their mortality (Connor et al., 2013). Even though it can be argued that one must differentiate between a reduction in lifespan and the side-effects experienced (or feared) in everyday life, e.g. long-term damage to health, long-term or uncontrolled changes in the body, dependency issues (as examined in our study), the results still show the same tendencies. Hence, although elite sport is hardly favourable to good health (Møller, 2010), a majority of athletes in our study (and this is confirmed in other empirical studies) do consider the severe side-effects of doping when asked about this in a hypothetical manner. The importance of health and side-effects was described as being of great concern by a male athlete in the study:

... if it [doping] were legal, I would be very worried about the side-effects (male athlete, speed and power sport).

6. Concluding remarks

The purpose of the current article was to examine the circumstances which athletes say would affect their considerations of whether to dope or not to dope, and to explore the differences between athletes of different gender, age and sport type. In order to do so, we combined various theoretical and empirical findings from the field to develop a framework of possible deterrents and incentives, which were then presented to elite athletes as hypothetical questions. In our study we measure athletes' deliberations about reasons that would affect their use or refrain from using doping in the hypothetical situation. Thus results cannot (and must not) be interpreted as actual use of doping by the participants or as a concrete wish or plan to do so. 645 Danish elite athletes participated.

We found that multiple reasons or circumstances of a personal, emotional, situational and social character have an effect on athletes' decisions on whether or not to dope. Furthermore, we discovered that athletes of different gender, age and/or sports type reacted differently to incentives and deterrents. Notably, female athletes and younger athletes found more reasons that acted as *deterrents* (than older, male athletes). However, when confronted with *incentives* to dope, the type of sport of the athlete was often a more decisive factor.

The results of this study confirm that current anti-doping efforts focusing on a punitive approach act as a preventive factor for a majority of athletes. The fear of being banned from sport, for example, was the deterrent that affected most athletes, in particular female athletes (although the fear of a ban decreases with age in both genders). Further, a very low likelihood of being caught was perceived as an incentive by more than half the athletes surveyed, regardless of gender, age and sports type. Nevertheless, some athletes were not greatly affected by the punitive approach, stating that it would not be difficult to dope without being caught or indicating that the effect of doping could be worth the risk. Furthermore, not all athletes consider the illegal status of doping to be a reason not to dope.

On the other hand, our findings also point towards other factors than merely anti-doping efforts and rationales, such as circumstances linked to norms and values, the social context, sports networks, critical events during a sporting career or reasons related to health or the rehabilitation of the body. All these factors were taken into account and considered to have an effect as deterrents or incentives to different degrees.

Female athletes seem to have internalised anti-doping norms to a higher degree than male athletes. We found that arguments concurring with current anti-doping norms and values were more likely to be used by female athlete as reasons not to dope, i.e. they did not want to use doping because this would be unnatural, unfair to competitors and create guilt or shame.

The social context and the opinions of reference groups within the sport were found to play important roles (e.g. fear of social sanctions from coach, family or peers was rated highly as a deterrent by all groups of athletes). Thus, this study also highlights the importance of social networks as facilitators or inhibitors for athletes who might consider doping; even so, a minority of athletes felt they would be able to dope without experiencing condemnation from their social environment. Actual support from their social environment in their use of doping was not often seen as an incentive. The accessibility of doping substances had a relatively low impact, both as a deterrent and as an incentive – except for one specific type of accessibility, namely access to qualified medical supervision. This prospect was the highest ranked incentive among all groups of athletes.

Furthermore, circumstances that were in some way related to maintaining physical health, reducing health risks or achieving a faster rehabilitation from setbacks like injuries or other critical events in a sporting career were often considered important factors in the hypothetical decision whether or not to dope. This emphasises the potential role of doctors or experts supervising athletes. In line with this – and as part of an anti-doping prevention programme – it is recommended that athletes' and the sports environment awareness are sharpened for the importance of critical events and the vulnerability of especially older athletes during these periods and that the pivotal role of doctors in such situations be emphasised. Further, our findings suggest that a focus on the side-effects of doping substances (as integrated in most current anti-doping programmes) seems to be a plausible deterrence strategy; however, one must keep in mind that not all athletes believe in negative side-effects and not all doping substances actually produce negative side-effects.

Taking into account the competitive nature as well as the commercialisation of sport, it was surprising that top results in competitions, financial sanctions, the possibility that competitors dope, as well as the specific effects of doping on the body (i.e. gain in muscle mass), had relatively little effect (compared with other incentives and deterrents) on athletes' hypothetical decisions whether or not to dope. Finally, our results suggest that athletes' assessments of the effects of doping and the physical demands of their particular sport must be taken into consideration

when evaluating doping decisions and risk groups. To sum up, the results of this study indicate that there are numerous circumstances which influence athletes' thoughts on doping and that the effects of different circumstances often vary among athletes of different gender, age and/or sports type. Thus, our results suggest a need for diversified anti-doping prevention strategies to target specific groups of athletes. Furthermore, our findings suggest that the age, gender and sports type of athletes should be considered when empirically testing theoretical PEDM models.

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References

- Alaranta, A., Alaranta, H., Holmila, J., Palmu, P., Pietilä, K., & Helenius, I. (2006). Self-reported attitudes of elite athletes towards doping: Differences between type of sport. *International Journal of Sports Medicine*, 27, 842–846.
- Amsterdam, J., Opperhuizen, A., & Hartgens, F. (2010). Adverse health effects of anabolic-androgenic steroids. *Regulatory Toxicology and Pharmacology*, 57, 117–123.
- Ashenden, M., Gough, C. E., Garnham, A., Gore, C. J., & Sharpe, K. (2011). Current markers of the Athlete Blood Passport do not flag microdose EPO doping. *European Journal of Applied Physiology*, 111, 2307–2314.
- Backhouse, S. H., McKenna, J., Robinson, S., & Atkin, A. (2007). Attitudes, behaviours, knowledge and education—Drugs in sport: Past, present and future. A report for the World Anti-Doping Agency, Canada. Retrieved from: http://www.wada-ama.org/rtecontent/document/Backhouse_et_al.Full_Report.pdf
- Backhouse, S. H., Whitaker, L., & Petróczy, A. (2011). Gateway to doping? Supplement use in the context of preferred competitive situations, doping attitude, beliefs, and norms. *Scandinavian Journal of Medicine and Science in Sports*, <http://dx.doi.org/10.1111/j.1600-0838.2011.01374.x>
- Beamish, R., & Ritchie, I. (2005). From fixed capacities to performance-enhancement: The paradigm shift in the science of 'training' and the use of performance-enhancing substances. *Sport in History*, 25(3), 412–433.
- Bette, K. H. (2004). Biographical risks and doping. In J. Hoberman, & V. Möller (Eds.), *Doping and Public Policy*. Odense: University of Southern Denmark.
- Bird, E. J., & Wagner, G. G. (1997). Sport as a common property resource. A solution to the dilemma of doping. *Journal of Conflict Resolution*, 41, 749–766.
- Bloodworth, A., & McNamee, M. (2010). Clean Olympians? Doping and anti-doping: The views of talented young British athletes. *International Journal of Drug Policy*, 21, 276–282.
- Bloodworth, A. J., Petróczy, A., Bailey, R., Pearce, G., & McNamee, M. J. (2010). Doping and supplementation: The attitudes of talented young athletes. *Scandinavian Journal of Science and Medicine in Sport*, <http://dx.doi.org/10.1111/j.1600-0838.2010.01239.x>
- Breivik, G. (1987). The doping dilemma. Some game theoretical and philosophical considerations. *Sportwissenschaft*, 17, 83–94.
- Breivik, G. (1992). Doping games a game theoretical exploration of doping. *International Review for the Sociology of Sport*, 27, 235–253.
- Breivik, B., Hanstad, D. V., & Loland, S. (2009). Attitudes towards use of performance-enhancing substances and body modification techniques. A comparison between elite athletes and the general population. *Sport in Society*, 12, 737–754.
- Brissonneau, C. (2008). *Doping in professional sport. Policy Department B. Structural and Cohesion Policies. European Parliament's Committee on Culture and Education*. Brussels: European Parliament. Retrieved from: <http://www.europarl.europa.eu/committees/en/CULT/studiesdownload.html?languageDocument=EN&file=22129>
- Brissonneau, C. (2010). An integrationist study of phenomenon of doping (1950–2010). In CERSES. *Centre de Recherche Sens, Ethique, Société. Conference presentation: Body enhancements and (il)legal drugs in sport and exercise—Human and social perspectives* Department of Exercise and Sport Sciences, University of Copenhagen, 10–12 November.
- Byrne, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125, 367–383.
- Catlin, D. H., Fitch, K. D., & Ljungqvist, A. (2008). Medicine and science in the fight against doping in sport. *Journal of Internal Medicine*, <http://dx.doi.org/10.1111/j.1365-2796.2008.01993.x>
- Christiansen, A. V. (2007). A clean amateur makes a good professional: Deviance, professionalism and doping in Danish cycling. In G. Spitzer (Ed.), *Doping and doping control in Europe*. Aachen: Meyer & Meyer.
- Christiansen, A. V. (2009). Doping in fitness and strength training programmes—politics, motives and masculinity. In V. Möller, M. J. McNamee, & P. Dimeo (Eds.), *Elite sport, doping and public health* (pp. 99–118). Odense: Syddansk Universitetsforlag.
- Coakley, J. (2009). *Sports in society: Issues and controversies* (10th ed.). New York: McGraw-Hill Companies.
- Connor, J., Woolf, J., & Mazanov, J. (2013). Would they dope? Revisiting the Goldman dilemma. *British Journal of Sports Medicine*, 47, 697–700. <http://dx.doi.org/10.1136/bjsports-2012-091826>
- Donovan, R. J., Egger, G., Kapernick, V., & Mendoza, J. (2002). A conceptual framework for achieving performance enhancing drug compliance in sport. *Sports Medicine*, 32(4), 269–284.
- Eber, N. (2007). The performance-enhancing drug game reconsidered: A fair play approach. *Journal of Sports Economics*, 9, 318–327.
- Eber, N., & Thépot, J. (1999). Doping in sport and competition design. *Recherches Economiques De Louvain*, 65, 435–446.
- Ehrnborg, C., & Rosén, T. (2009). The psychology behind doping in sport. *Growth Hormone & IGF Research*, 19, 285–287.
- Gilberg, R., Breivik, G., & Loland, S. (2006). Anti-doping in sport: The Norwegian perspective. *Sport in Society*, 9, 334–353.
- Goldman, B., Bush, P. J., & Klatz, R. (1984). *Death in the locker room: Steroids & sports*. South Bend, IN: Icarus Press Inc.
- Grogan, S. (1999). *Body image: Understanding body dissatisfaction in men, women, and children*. London: Routledge.
- Gucciardi, D. F., Jalleh, G., & Donovan, R. J. (2010). Does social desirability influence the relationship between doping attitudes and doping susceptibility in athletes? *Psychology of sport and exercise*, 11, 479–486.
- Gucciardi, D. F., Jalleh, G., & Donovan, R. J. (2011). An examination of the Sport Drug Control Model with elite Australian athletes. *Journal of Science and Medicine in Sport*, <http://dx.doi.org/10.1016/j.jsams.2011.03.009>
- Hamilton, T., & Coyle, D. (2012). *The secret race, doping, cover-ups, and winning at all cost. Inside the hidden world of the Tour de France*. London: Bantam Press.
- Hanstad, D. V. (2006). *Utøveundersøkelse meldeplikt 2006. Publisert fra 11.10.2006 til 13.11.2006*. (Unpublished datarapport).
- Harris, C. R., Jenkins, M., & Glaser, D. (2006). Gender differences in risk assessment: Why do women take fewer risks than men? *Judgment and Decision Making*, 1, 48–63.
- Haugen, K. K. (2004). The performance-enhancing drug game. *Journal of Sports Economics*, 5, 67–86.
- Hauw, D., & Bilard, J. (2010). Dynamical analysis of substance use before doping. In *Conference presentation: Body enhancements and (il)legal drugs in sport and exercise—Human and social perspectives* Department of Exercise and Sport Sciences, University of Copenhagen, 10–12 November.
- Heikkala, J. (1993). Modernity, morality, and the logic of competing. *International Review for the Sociology of Sport*, 28(4), 355–370.
- Heggie, V. (2011). *A history of British sports medicine*. Manchester/New York: Manchester University Press.
- Hoberman, J. (2002). Sports physicians and the doping crisis in elite sport. *Clinical Journal of Sport Medicine*, 12, 203–208.
- Holm, S., McNamee, J. M., & Pigozzi, F. (2011). Ethical practice and sports physician protection: A proposal. *British Journal of Sports Medicine*, 45, 1170–1173.
- Holm, S., & McNamee, M. (2009). Ethics in sports medicine. *British Medical Journal*, 339, 7728.
- Houlihan, B. (2002). *Dying to win: Doping in sport and the development of anti-doping policy* (2nd ed.). Strasbourg: Council of Europe Publishing.
- Huybers, T., & Mazanov, J. (2012). What would Kim do: A choice study of projected athlete doping considerations. *Journal of Sport Management*, 26, 322–334.
- Kayser, B., Mauron, A., & Miah, A. (2007). Current anti-doping policy: A critical appraisal. *BMC Medical Ethics*, 8(2) <http://dx.doi.org/10.1186/1472-6939/8/2>
- Kirby, K., Moran, A., & Guerin, S. (2011). A qualitative analysis of the experiences of elite athletes who have admitted to doping for performance enhancement. *International Journal of Sport Policy and Politics*, 3(2), 205–224.
- Korn, E., & Robeck, V. (2013). *The role of sports physicians in doping: A note on incentives. Joint discussion Paper Series in Economics*. No. 17.
- Laure, P., & Reinsberger, H. (1995). Doping and high-level endurance walkers. Knowledge and representation of a prohibited practise. *Journal of Sports Medicine and Physical Fitness*, 35, 228–231.
- Lentillon-Kaestner, V., & Carstairs, C. (2010). Doping use among elite cyclists: A qualitative psychosociological approach. *Scandinavian Journal of Medicine and Science in Sports*, 20, 336–345.
- Lentillon-Kaestner, V., Hagger, M. S., & Hardcastle, S. (2011). Health and doping in elite-level cycling. *Scandinavian Journal of Medicine and Science in Sports*, <http://dx.doi.org/10.1111/j.1600-0838.2010.01281.x>
- Lippi, G., Banfi, G., Franchini, M., & Guidi, G. C. (2005). New strategies for doping control. *Journal of Sports Sciences*, 26, 441–445.
- Loland, S. (2004). The vulnerability thesis and its consequences: A critique of specialization in Olympic sport. In J. Bale, & M. K. Christensen (Eds.), *Post-Olympism? Questioning sport in the twenty-first century*. Oxford/New York: Berg.
- Lucidi, F., Zelli, A., Mallia, L., Grano, C., Russo, P. M., & Violani, C. (2008). The social-cognitive mechanisms regulating adolescents' use of doping substances. *Journal of Sports Sciences*, 26, 447–456.
- Lundby, C., Robach, P., & Saltin, B. (2012). The evolving science of detection of 'blood doping'. *British Journal of Pharmacology*, 165, 1306–1315.
- Lüschen, G. (1967). The interdependence of sport and culture. *International Review for the Sociology of Sport*, 2, 127–141.
- Maennig, W. (2002). On the economics of doping and corruption in international sports. *Journal of Sport Economics*, 3, 61–89.

- Mazanov, J., & Connor, J. (2010). Rethinking the management of drugs in sport. *International Journal of Sport Policy and Politics*, 2, 49–63.
- Mazanov, J., & Huybers, T. (2010). An empirical model of athlete decisions to use performance enhancing drugs: Qualitative evidence. *Qualitative Research in Sport and Exercise*, 2, 385–402.
- Mazanov, J., Huybers, T., & Connor, J. (2011). Qualitative evidence of a primary intervention point for elite athlete doping. *Journal of Science and Medicine in Sport*, 14, 106–110.
- Mazanov, J., & McDermott, V. (2009). The case for a social science of drugs in sport. *Sport in Society*, 12, 276–295.
- McNamee, M., & Phillips, N. (2011). Confidentiality, disclosure and doping in sports medicine. *British Journal of Sports Medicine*, 45(3), 174–177.
- Murphy, P., & Waddington, I. (2007). Are elite athletes exploited? *Sport in Society*, 10, 239–255.
- Møller, V. (1999). (*The doping devil*) *Doping Djæveln—En analyse af en hed debat*. Copenhagen: Gyldendal.
- Møller, V. (2010). *The ethics of doping and anti-doping. Redeeming the soul of sport?* London/New York: Routledge.
- Nikolopoulos, D. D., Spiliopoulou, C., & Theocharisa, S. E. (2010). Doping and musculoskeletal system: Short-term and long-lasting effects of doping agents. *Fundamental & Clinical Pharmacology*, 25, 535–563.
- O'Donnell, T., Mazanov, J., & Huybers, T. (2006). Towards a choice model of athletes' decision to use performance enhancing substances or methods: Factors and covariates. In *Conference paper: ACSPRI social science methodology conference 2006, methods for investigating performance enhancing drug use stream, at The University of Sydney, Sydney, Australia*. Retrieved from: <http://old.acspr.org.au/conference2006/proceedings/streams/ODonnell%20Mazanov%20Huybers%20paper.pdf>
- Overbye, M., & Wagner, U. (2013). Between medical treatment and performance enhancement: An investigation of how elite athletes experience Therapeutic Use Exemptions. *International Journal of Drug Policy*, <http://dx.doi.org/10.1016/j.drugpo.2013.03.007>
- Özdemir, L., Nur, N., Bağcivan, I., Bulut, O., Sümer, H., & Tezeren, G. (2005). Doping and performance enhancing drug use in athletes living in Sivas, Mid-Anatolia: A brief report. *Journal of Sports Science and Medicine*, 4, 248–252.
- Pedersen, I. K. (2010). Doping and the perfect body expert: Social and cultural indicators of performance-enhancing drug use in Danish gyms. *Sport in Society*, 13, 503–516.
- Petroczi, A., & Aidman, E. V. (2008). Psychological drivers in doping: The life-cycle model of performance enhancement. *Substance Abuse Treatment, Prevention, and Policy*, 3, 7.
- Petróczi, A., & Haugen, K. K. (2012). The doping self-reporting game: The paradox of a 'false-telling' mechanism and its potential research and policy implications. *Sport Management Review*, 15, 513–517.
- Petróczi, A., & Naughton, D. P. (2011). Impact of multidisciplinary research on advancing anti-doping efforts. *International Journal of Sport Policy and Politics*, 3, 235–259.
- Pitsch, W., & Emrich, E. (2012). The frequency of doping in elite sport: Results of a replication study. *International Review for the Sociology of Sport*, 47, 559–580.
- Rasmussen, K. (2012). *Cykelsport og askese—En analyse af cykelrytters livspraksis*. Department of Sport and Exercise Sciences, University of Copenhagen (Ph. d. thesis).
- Roderick, M. (2006). Adding insult to injury: Workplace injury in English professional football. *Sociology of Health and Illness*, 28(1), 76–97.
- Scarpino, V., Arrigo, A., Benzi, G., Garattini, S., La Vecchia, C., Bernardi, L. R., et al. (1990). Evaluation of prevalence of 'doping' among Italian athletes. *Lancet*, 336, 1048–1050.
- Smith, A. C. T., Stewart, B., Oliver-Bennetts, S., McDonald, S., Ingerson, L., Anderson, A., et al. (2010). Contextual influences and athlete attitudes to drugs in sport. *Sport Management Review*, 13, 181–197.
- Statistic Denmark. (2012). (*Statistical yearbook 2012*) *Statistisk Årbog 2012*. Retrieved from: <http://www.dst.dk/da/Statistik/Publikationer/VisPub.aspx?cid=16252>
- Strelan, P., & Boeckmann, R. J. (2003). A new model for understanding performance-enhancing drug use by elite athletes. *Journal of Applied Sport Psychology*, 15, 176–183.
- Strelan, P., & Boeckmann, R. J. (2006). Why drug testing in elite sport does not work: Perceptual deterrence theory and the role of personal moral beliefs. *Journal of Applied Social Psychology*, 36, 2909–2934.
- Striegel, H., Ulrich, R., & Simon, P. (2010). Randomised response estimates for doping and illicit drug use in elite athletes. *Drug and Alcohol Dependence*, 106, 230–232.
- Striegel, H., Vollkommer, G., & Dickhuth, H. H. (2002). Combating drug use in competitive sport. An analysis from the athletes' perspective. *Journal of Sports Medicine and Physical Fitness*, 42, 354–359.
- Stewart, B., & Smith, A. C. T. (2008). Drug use in sport: Implications for public policy. *Journal of Sport & Social Issues*, 32, 278–298.
- Sönksen, P. H., & Holt, R. (2009). Growth hormone, secretagogues and related issues. In J. L. Fourcroy (Ed.), *Pharmacology, doping and sports. A scientific guide for athletes, coaches, physicians, scientists and administrators* (pp. 135–166). New York: Routledge.
- Tangen, J. O., & Breivik, G. (2001). Doping games and drug abuse. A study of the relation between preferences, strategies, and behavior in relation to doping in Norwegian sport. *Sportwissenschaft*, 31, 188–198.
- Team Danmark & DIF. (2008). Dansk idræts holdning til brug af kosttilskud og præstationsfremmende hjælpemidler Et holdningsnotat. In *Danmarks Idræts-Forbund og Team Danmark 29. maj 2008 (justeret 10. december 2009)*. Retrieved from: [http://www.teamdanmark.dk/CMS/cmsresources.nsf/filenames/Græzonenotat%202008%20rettet%20dec%202009.pdf/\\$file/Græzonenotat%202008%20rettet%20dec%202009.pdf](http://www.teamdanmark.dk/CMS/cmsresources.nsf/filenames/Græzonenotat%202008%20rettet%20dec%202009.pdf/$file/Græzonenotat%202008%20rettet%20dec%202009.pdf)
- Team Danmark. (2009). (*Team Danmark support programme*) *Team Danmarks støttekoncept 2009–2012*. Retrieved from: <http://www.teamdanmark.dk/~media/Team%20Danmark/Media%20Archive/Documents/Forside/Udgivelser/Stoettekoncept/St%C3%B8ttekoncept%202009-2012.pdf>
- Thuyne, W. V., & Delbeke, F. T. (2008). Declared use of medication in sports. *Clinical Journal of Sports Medicine*, 18, 143–147.
- Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin*, 133, 859–883.
- Tscholl, P., Feddermann, N., Junge, A., & Dvorak, J. (2009). The use and abuse of painkillers in international soccer: Data from 6 FIFA tournaments for female and youth players. *American Journal of Sports Medicine*, 37(2), 260–265.
- USADA. (2012). Reasoned decision of the United States anti-doping Agency on disqualification and ineligibility. In *Report on proceedings under the world anti-doping code and the USADA protocol* United States Anti-doping Agency Claimant, v. LANCE ARMSTRONG, Respondent. United States Anti-Doping Agency. Retrieved from: <http://d3epuodzu3wuis.cloudfront.net/ReasonedDecision.pdf>
- Uvacsek, M., Nepusz, T., Naughton, D. P., Mazanov, J., Ránky, M., & Petróczi, A. (2011). Self-admitted behaviour and perceived use of performance enhancing versus psychoactive drugs among competitive athletes. *Scandinavian Journal of Science and Medicine in Sport*, 21, 224–234.
- WADC. (2009). *World anti-doping code 2009. Montreal: World Anti-Doping Agency*. Retrieved from: http://www.wada-ama.org/Documents/World_Anti-Doping_Program/WADP-The-Code/WADA_Anti-Doping_CODE_2009.EN.pdf
- WADA. (2010). *Laboratory statistics 2003–2011*. Retrieved from: <http://www.wada-ama.org/en/Anti-Doping-Community/Anti-Doping-Laboratories/Laboratory-Statistics/>
- Waddington, I. (1996). Development of sport medicine. *Sociology of Sport Journal*, 13, 176–196.
- Waddington, I., & Roderick, M. (2002). Management of medical confidentiality in English professional football clubs: Some ethical problems and issues. *British Journal of Sports Medicine*, 36, 118–123.
- Waddington, I., & Smith, A. (2009). *An introduction to drugs in sport. Addicted to winning?* Oxon, UK: Routledge.
- Wagner, U., & Hanstad, D. V. (2011). Scandinavian perspectives on doping: A comparative policy analysis in relation to the international process of institutionalizing anti-doping. *International Journal of Sport Policy*, 3, 355–372.
- Young, K. (1993). Violence, risk and liability in male sports culture. *Sociology of Sport Journal*, 10, 373–396.