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Doping attitudes, moral disengagement, and ethical decision making of young talented athletes; An advanced intervention study

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Final report for the World Anti-Doping Agency
Social Science Research Grant (2016-2018)

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Animations: Rekel Productions

Contents

Executive Summary

Background

The importance of new-value based educational programs was underlined at the WADA conference in 2015. That is, programs that focus on the development of positive values in life, such as integrity, self-awareness, and critical thinking (Koehler & Cunningham, 2015). These educational programs intend to prevent doping use by affecting ethical decision making of athletes in favor of a clean sport.

The aim of the current study was to investigate the effectiveness of a refined ethical decision making program that was previously developed with WADA funding (Elbe, Schlegel, & Brand, 2012). Their prevention program was aimed at the ethical decision-making process, which encompasses more than just the sense of what is right and wrong. They adopted the dilemma technique in which participants were confronted with several sport-specific dilemma situations that they spontaneously had to react to and come up with pro and con arguments. Recently, Elbe and Brand (2015) pointed out that a systematic training of ethical decision-making is the way to move forward as it influences the decision to dope in sport situations and empowers young talented athletes to choose a doping-free path.

Furthermore, our goal was to design an ethical decision making training program that is ready to be implemented as part of a structural national clean sports educational program. Our research question is: what is the effect of an advanced ethical decision making training, compared to a control group, on adolescent athletes' moral disengagement, doping attitude, and achievement motivation?

Methods

Developing the advanced ethical decision-making training

First the materials from the original ethical decision-making program (Elbe, Schlegel, & Brand, 2012) were improved throughout six phases. Based on interviews with 16 adolescent athletes were interviewed (56% female) between 12-20 years old (M = 16.9, SD = 2.37) 12 dilemmas were selected and adapted. All dilemmas involved fictitious young athletes in an early career stage who were facing the decision to either use doping or not, or to report the doping use of another person or not. The dilemmas were then turned into animations in which visuals were used to present and emphasize the story as told by a

professional female voice-over. In addition, for each of the dilemma's possible consequences for the choices faced by the characters were added. A serious gaming element was incorporated by creating a scoring system that allowed participants to earn points through the assignments dealing with the potential consequences of the dilemmas.

Testing the effectiveness of the advanced ethical decision-making training

In the testing of the Effectiveness of the Ethical Decision Making Training 2.0, adolescent athletes between 12-21 years old with an official Olympic sport status (either elite or talent status) were recruited.

The doping attitude (two measures), moral disengagement (in sport and doping, two separate measures), and achievement motivation (task orientation and ago orientation) was measured at two time (before and after the intervention) with an experimental and control group.

Results

The response on the pre-measure was 804 respondents. The final sample (pre- and post-measure) consisted of 395 respondents (of which 88 in the control condition). There was no main effect of time nor condition for all study variables (all *p*'s > .05). No significant group x time interaction was observed either. In sum, the repeated measure ANCOVA revealed no significant effects of the training program on the outcome variables. There are several potential explanations for the absence of a favourable intervention effect: 1) a 'floor effect' (already favourable scores on doping attitude and moral disengagement before the intervention was offered, so little room for improvement) 2) exposure to the intervention too early in the athletes' career (therefore not susceptible for the effect), and 3) the composition of our training program (number of sessions).

Conclusion

To conclude, we have made several successful adaptations of the original program and invite future researchers to use our study material[1]:

[1] The study material is available via the authors and via de Anti-Doping Authority the Netherlands.

- Interviews with members of the target group gave us qualitative information and feedback on the dilemmas in order to customize and refine our ethical decision making program
- The training program was made more attractive with visual (animations), sound (voice-over), and serious game elements. We also obtained more variation with different assignments in each session. One of the authors of the study that we replicated, used our material in her new study as it was valued as appealing and useful
- Participants seemed to enjoy (parts of) the program, as we could read in the answers to open ended questions. Coordinators of the secondary schools were also enthusiastic about the program and the aim to educate on ethical decision making and morality, and very much willing to cooperate, also in future studies.
- Our training programs contributed to value-based education and primary prevention. The participants in this study showed low doping attitude and low moral disengagement and our program might have prepared them for future challenging situations and dilemmas in their sport career. As our program will be part of the national talented athletes training program of NOC*NSF, more (adolescent) elite athletes will be able to benefit from it.

Future perspectives

For future studies, it might be wise to follow our second method to recruit respondents, namely via secondary schools and high schools (schools with talented athletes) and to develop an educational set of lessons to support the ethical decision making program. We advise to prepare a set of classroom lessons concerning the topic at hand and to schedule time to fill out the questionnaires and time to address the dilemmas in the session. This will result in higher response rates and less attrition. We also advice the use of technological innovations, such as animations and clips, and to develop a serious game with different levels to challenge the respondents and enhance learning and prevention effects. Special attention should be given to privacy regulations (recently introduced in Europe) to ensure safety of personal data and the storage of privacy protected information.

We strongly advocate follow-up measurements of doping attitude and moral disengagement, for instance after 6, 12, and 24 months to investigate developments over time and to explore whether the intervention has a primary prevention effect. The use of implicit measures of the doping, such as the implicit association test to measure athletes'

attitudes on doping as developed by Brand, Heck, and Ziegler (2014), is recommended in addition to explicit measures.

The current study was focused on the individual athlete's experiences, with the aim to strengthen their personal ethical decision making. For the future, we recommend to expand research to the influence of the members of the social entourage on the individual decision to use, or stay away from, banned performance enhancing drugs.

Introduction

The importance of new-value based educational programs was underlined at the WADA conference in 2015. That is, programs that focus on the development of positive values in life, such as integrity, self-awareness, and critical thinking (Koehler & Cunningham, 2015). These educational programs intend to prevent doping use by affecting ethical decision making of athletes in favor of a clean sport. Our challenge is to develop an affective educational program to support this goal. Recently, Elbe and Brand (2015) pointed out that a systematic training of ethical decision-making is the way to move forward as it influences the decision to dope in sport situations and empowers young talented athletes to choose a doping-free path. Our aim is not to develop yet another training program, but to investigate the effectiveness of a refined ethical decision making program that was previously developed with WADA funding (Elbe, Schlegel, & Brand, 2012). Furthermore, our goal is to design an ethical training program that is ready to be implemented as part of a structural national clean sports educational program. Our research question is: what is the effect of an advanced ethical decision making training, compared to a control group, on adolescent athletes' moral disengagement, doping attitude, and achievement motivation?

Moral development

The education of adolescents, teenagers between 11 and 18 years, is aimed at gaining knowledge and skills, as well as empowering them to tackle the hurdles that are inheritably part of their development. One critical area of development is their moral development, as 'individuals develop moral standards from a variety of influences, such as the observation of others, approving and disapproving reactions of their behavior by others, and direct tuition. These moral standards regulate behavior through evaluative self- reactions: people feel good when behaving in ways that match their moral standards…' (Kavussanu, 2016, page 51-52). In other words, children, and adolescents even more, acquire moral standards of what is right and wrong and will strive to act accordingly. However, individuals do not always behave in line with their moral standards due to psychological mechanisms known as moral disengagement. In the social cognitive theory of moral thought and action, Bandura outlines how moral behaviors are preceded by the anticipation of (negative) consequences, such as emotions like guilt or shame, or potential negative consequences

for others. Ethical decision-making can be viewed as one of the antecedents of immoral behavior. The assumption is when unethical decisions are made, self-regulation processes have failed. The most important part of this regulatory process is moral disengagement (Bandura, 1986). Moral disengagement encompasses the psychological mechanism that underlies the process of moral transformation to immoral thoughts and behavior. This mechanism constitutes of eight psychological mechanisms (Bandura's, 1991) such as moral justification, diffusion of responsibility, distortion of consequences, and attribution of blame. Moral disengagement has been studied in various contexts, including sport (Boardley & Kavussanu, 2009). In combination with Theory of Planned Behavior (Ajzen, 1991), that encompasses behavioral, normative, and control beliefs that lead to behavioral intentions and actual behavior, dilemmas on ethical decision-making and doping attitudes can be developed for doping-prevention programs.

Professional sport can be considered a specific environment for the development of moral and ethical values as it challenges elite athletes to deal with rules and regulations, emotions, and performance. Also, excelling in sport and gaining the elite athlete level is typically associated with total dedication to sport, experienced performance pressure, financial reward (e.g., sponsorship) and fame. In the end, only a small proportion of the talented athletes reach the highest elite level within their area of expertise There are different talent levels in sport. In the Netherlands, the sports federations nominate candidates for the talent status. The Dutch Olympic Committee*Dutch Sport Federation (NOC*NSF) yearly allocates a level of talent status to athletes that expresses their level of expertise and their access to a package of financial support, sport facilities, training, and coaching. These levels vary from (lowest to highest level) 'promising, national talent, international talent, high performing status, selection status, A-status'. Each year, around 5000 Dutch talented athletes receive a talent status on one of these levels. As the status is allocated for one year, this group of talented athletes changes every year, with newcomers and athletes that lose their status. One can easily imagine that the dedication to sport and focus on sport performance is high for talented (elite) athletes.

Adolescents engaging in elite sport have many parallel challenges that they have to deal with; their sport and performance, but also growing up, social situations with family and friends and education in secondary or high school. When focusing on sport performance, challenges are prevalent for instance in coping with winning or losing or dealing with injuries and personal fitness. Education and support in handling these challenging (sport) situations is necessary, especially for adolescent athletes. As

Kegelaers, Wylleman, De Brandt, van Rossum, and Rosier, 2018) pointed out in their holistic athletic career model, athletes have to deal with transitions and challenges on different levels (athletic, psychological, psychosocial, academic & vocational, and financial) throughout the different stages in their career. The use of banned performance enhancing drugs (PEDs) to gain a competitive advantage or to recover from injuries might be tempting.

Doping attitude

In 2015, the Anti-Doping Authority the Netherlands (Dopingautoriteit, 2015) presented a study (n=291) that showed that 4,2% of the Dutch elite athletes use doping, in most cases (3,9%) via blood manipulation. Furthermore, even though athletes have information on forbidden performance enhancing drugs, medicine, and supplements, it is estimated that between 5% and 20% of the athletes use doping in sport and around 2% is tested positive by anti-doping organizations (Bloodworth, Petroczi, Bailey, Pearce, & McNamee, 2012). These percentages underline the need for programs to enhance fair play and if achievable, a doping-free sport. Recently, several countries are preparing a 'Doping Law' to prevent and control athletes' substance use and strive for a clean and healthy sport climate. WADA strives for the same goal via anti-doping regulations and list of prohibited substances. In the 2021 World Anti-Doping Code Review Process (2021 Code Review Process), WADA aims for educational programs that focus on prevention: 'Prevention programs should be values based and directed towards athletes and athlete support personnel with a particular focus on young people through implementation in school curricula' (page 61). And on page 62: 'Prevention programs shall be primarily directed at young people, appropriate to their stage of development, in school and sports clubs, parents, adult athletes, sport officials, coaches, medical personnel and the media'. Our study contributes to this goal as we focus on young talented athletes and aim to test the effect of a preventive, ethical decision making program.

In the literature, many examples of preventive programs can be found as well as antecedents of doping behavior (e.g., Ntoumanis, Barkoukis, & Backhouse, 2014). Antecedents of doping behavior include the athletes' achievement goals (e.g., to improve physical functioning for performance enhancement), athletes' strategies to cope with social and psychological pressure (Erhnborg & Rosén, 2009), athletes' beliefs (Lazarus, Barboukis, Rodafines, & Tzorbatzoudis, 2010), norms, and values that encompass the convincement that doping has performance enhancing effects, and athletes' knowledge of

other athletes using doping (Alaranta, Alaranta, Holmila, Palmu, Pietila, & Helenius, 2006), and athletes' specific moral orientations (Barboukis, Lazarus, Tsorbatzoudis, & Rodafinos, 2013).

Existing prevention programs are primarily aimed at education on health consequences of doping-use and enhancing knowledge on banned substances and methods and demonstrate rather low effects (Koehler & Cunningham, 2015). Preventive programs aimed at changing the cognitive processes that are involved in moral thought, aimed at inhibiting and regulating behavior seem much more effective. Educational programs aimed at the prevention of doping in sports are still at the center of attention in practice as well as in science. At the WADA conference in 2015, the importance of value-based educational programs was underlined, that is, programs that focus on the development of positive values in life such as integrity, self-awareness, and critical thinking (Koehler & Cunningham, 2015). These educational programs intend to prevent doping use by affecting ethical decision making of athletes in favor of a clean sport. Our challenge is to develop an affective educational program to support this goal.

Recently, Elbe and Brand (2015) pointed out that a systematic training of ethical decision-making is the way to move forward as it influences the decision to dope in sport situations and empowers young talented athletes to choose a doping-free path. Their prevention program was aimed at the ethical decision-making process, which encompasses more than just the sense of what is right and wrong. They adopted the dilemma technique in which participants were confronted with several sport-specific dilemma situations that they spontaneously had to react to and come up with pro and con arguments.

A recent meta-analysis (Ntoumanis, Barboukis, & Backhouse, 2014) on personal and psychosocial predictors of doping use underlines the importance of moral factors, as morality and self-efficacy to refrain from doping had the strongest relation with doping intentions and behaviors.

Achievement motivation

Barkoukis, Lazuras, Tsorbatzoudis, and Rodafinos (2011) highlight the importance of athletes' achievement motivation. Overall, the achievement goal theory (Nicholls, 1989) postulates that the high prevalence of antisocial behaviours in competitive settings stems from the motivation to demonstrate competence. How an individual defines competence, determines under what circumstances (s)he feels successful. That is, when one

conceptualizes competence based on other-referenced criteria, it results in feeling successful when outperforming others – a concept called ego goal orientation. However, when one conceptualizes competence based on self-referenced criteria instead, it results in feeling successful when learning something new, mastering a skill, or improving on a task – also known as task goal orientation. Several studies support the claim that the goal of ego-oriented individuals to demonstrate superiority over others leads to a lack of concern about justice and the welfare of others in a competitive setting (Nicholls, 1989). Specifically, ego orientation is positively associated with the approval of intentionally injurious acts towards sports opponents (e.g., Duda, Olson, & Templin, 1991; Kavussanu & Roberts, 2001) and negatively associated with prosocial behaviour in sports (e.g., Sage & Kavussanu, 2007). In contrast, task orientation is negatively linked to antisocial behaviour and positively linked to prosocial behaviour (Kavussanu, 2006; Sage & Kavussanu, 2007). Moreover, turning to the topic of doping, Barkoukis, Lazuras, Tsorbatzoudis, and Rodafinos (2011) found that the athletes' achievement motivation is significantly related to doping intentions and behaviour. That is, athletes with a task orientation show lower doping intentions scores than athletes with an ego orientation. In other words, athletes are more at risk to doping when they mainly pursue the need to outperform others than when they focus on the development of their personal performance.

The current study

In line with previous studies in this area, our study focuses on national level athletes (Whitaker, Long, Petroczi, & Backhouse, 2013) and is aimed at young, talented athletes as they are developing physically, socially, and mentally, and conceivable for changing doping attitudes and behavior among adolescents (Koehler & Cunningham, 2015) rather than among adults.

In the literature, there is a lack of agreement about the most effective method in studying doping behavior. Some researchers adopt qualitative methods such as interviews (Boardley, Grix, & Dewar, 2014), whereas others tend to use quantitative methods such as self-reports (Ernborg & Rosén, 2009; Detert, Treviño, & Sweitzer, 2008) or biomedical tests such as hair or urine testing. Some authors state that controlling (and preventing) doping should be done via objective methods such as hair analyses (Aidman, Petroczi, Hussain, Deshmukh, Uvacsek, Toth, Barker, & Naughton, 2010), whereas others state that preventing doping via monitoring self-reported attitudes towards doping (Ehrnborg &

Rosén, 2009) might be equally effective and, in contrast to objective methods, provide insight into the underlying psychological processes. A recent study on willingness to report doping in sport demonstrated that contextual differences exist; the type of sport can determine the athletes' perceived role in reporting doping in their sport (Whitaker, Backhouse, & Long, 2014). The authors argue that a single, universal approach is unattainable as sport-context is important. Therefore, we will study differences between athletes in different (individual and team) sports. Moreover, we will rely on qualitative (interviews) and quantitative methods, to capture athletes' moral thoughts, actions, and reports of ethical decisions and behaviors.

To design effective and practically relevant preventive tools to avoid doping, the current study will contribute in three ways: (1) we will test a previously developed ethical decision making training make adaptations based on the previous study results and recent insights, (2) we will interview adolescent athletes to investigate their experiences and dilemmas in order to refine our ethical decision making program, add serious game elements, and perform a pilot study to reinforce effectiveness; (3) we will test the advanced intervention in a large sample of talented adolescents athletes.

We will build on past studies and refine an existing WADA funded intervention method (ethical decision making training with dilemmas related to doping attitude and behavior, Elbe, Schlegel, & Brand, 2012). Furthermore, to strengthen study effectiveness and to reduce the risk of distortion in the experimental phase, we will use an internet-based intervention with technological innovations. These innovations encompass the development of an educational (serious) game in which ethical decision making will be trained, and the use of animations and voice-over. In other words, we will develop an advanced ethical decision making training (ADMT 2.0), that we believe will increase program effectiveness and adherence. Adolescents are frequent users of technology. By adding technological innovations, we aim to connect to their way of communicating. To our knowledge, serious games to train ethical decision making were not previously used in anti-doping educational programs. However, in other fields such as in medical ethical decision making, the validity and effectiveness of serious games was established (Graafland, Vollebergh, Lagarde, van Haperen, Bemelman, & Schijven, 2014). Serious games can be defined as computer-based interactive educational games with the goal to enhance knowledge, skills, and attitudes of users (e.g.,Kim, Park, & Beak, 2009, Knight, Carley, Tregunna, Jarvis, Smithies, de Freitas, Dunwell, & Mackway-Jones, 2010), and are primarily focused on decision-making, attitude change, and behavior change. Advantages

are that in-game behaviors can be observed and its immediate and longer term effects, and games enhance users' motivation to participate (Granic, Lobel, & Engels, 2014).

Second, we are aiming for a large sample recruited via the National Anti-Doping Organization which constitutes of male and female athletes. In the intervention study that we will replicate, participants were recruited via a press release and a link to a project website, which resulted in a disappointing 4.5% response rate (n=112). In the current study, we aim for a much higher response rate. Our target group consists of around 5000 (potential) elite athletes. Participants will be recruited via the Anti-Doping Authority the Netherlands (Dopingautoriteit) that is responsible for doping controls and prevention of doping via educational programs in the Netherlands. At these educational sessions, they will be approached for our study. Moreover, their sports federation and NOC*NSF (Netherlands Olympic Committee*Netherlands Sport Federation) will be involved in the recruitment and execution phase.

We will focus on different individual and team sports as it allows for a systematic study of the attitude and intentions towards doping of these athletes. In team sports, other contextual factors come into play, such as relationships with teammates that might affect the motivational climate or the moral disengagement of athletes (Hodge, Hargreaves, Gerrard, & Lonsdale, 2013). In previous studies, the distinction between individual and team sports has not been systematically tested.

Third, the previous program significantly changed doping attitudes of adolescent athletes in a previous study, however, with a medium size effect (Elbe, Schlegel, & Brand, 2012) and, for one of their hypotheses, in the opposite direction. Our advanced program is expected to have a high impact on athletes and show strong effects in decreasing the doping attitudes. The introduction of technological innovations such as the serious game will strengthen study results, as was demonstrated in other fields (e.g., Whitaker et al., 2014). Our goal is to refine and expand the existing ethical decision making training and study its effect during the intervention period. A no-treatment control group will be invited to fill out the pre-, and post-measurements. Furthermore, we will interview adolescent athletes and perform a pilot study.

The significance of the present study is its contribution to the development of a structural educational program 'clean sport'. In the Netherlands, NOC*NSF is currently working on a structural educational program for all talented athletes. The program that will be designed and tested in the proposed study is a significant part of this initiative. One of the main target groups of the Dutch NADO (Anti-Doping Authority the Netherlands) are

young talented athletes. Since 2013, the Netherland Olympic Committee*Netherlands Sports Confederation (NOC*NSF) started to make national educational programs for talents in order to prepare them for a future elite athlete career. The subjects are e.g.: nutrition, mental preparation, physical conditioning and also doping prevention. In 2014, a structural educational program on doping prevention was made by NOC*NSF and the Anti-Doping Authority the Netherlands. Talents will attend at three crucial moments during their sporting career an anti-doping information and education session (bronze, silver and gold sessions). In order to establish if these sessions are effective, especially for building a strong clean sports attitude, it is necessary to demonstrate that these sessions are effective, practical, have substantial adherence to the program, and if needed, how they can be improved.

In summary, our research question is: What is the effect of an advanced ethical decision making training (ADMT 2.0 versus a control group) on adolescent athletes' doping attitude, moral disengagement, and achievement motivation?

Based on the literature, we hypothesized:

1. Advanced ethical decision-making training (ADMT 2.0) will positively change doping attitudes of adolescent athletes in individual and team sports, in contrast to the control group (CG) where no changes in doping attitudes are expected.

2. Advanced ethical decision-making training (ADMT 2.0) will decrease moral disengagement of adolescent athletes in individual and team sports, in contrast to the control group (CG) where no change in moral disengagement is expected.

3. Advance ethical decision-making training (ADMT 2.0) will positively change achievement motivation of adolescent athletes in individual and team sports, in contrast to the control group (CG) where no change in achievement motivation is expected.

Method

The aim of the present study was to test the effects of the advanced ethical decision-making training (ADMT 2.0). To adhere to this aim, we first developed the advanced ethical decision-making training (ADMT 2.0) by improving the materials of the original ethical decision-making training (Elbe, Schlegel, & Brand, 2012). This improvement took place in six phases. Second, using the improved materials, we tested the effectiveness of the advanced ethical decision-making training.

The project took place between April 2016 and April 2018, although we extended the data gathering period with one month to allow respondents to complete the intervention program. Therefore, data was gathered in the period August-September 2016 (interviews), April - July 2017 (pilot) and in the period November 2017 – May 2018 (main study testing effectiveness of training). Most data was gathered between February – May 2018. The recruitment of participants for the main study took place continuous throughout the project up to May 2018.

Improvement of Training Materials

After investigating the effectiveness of their Ethical Decision-Making Training (2012), Elbe, Schlegel, and Brand recommended making a few changes to the training for future use. One of them was to reduce the number of training sessions as this may decrease the participant drop-out rate. In addition, they recommended conducting a qualitative study to take a closer look at the participants' experiences with the training. We took these recommendations to heart and conducted interviews with the target group (i.e., talented adolescent athletes) to improve the training materials through 5 phases. First, we reduced the number of training sessions from six to four and based the selection of the dilemmas on the ratings of the participants (Phase 1). We then adjusted the selected dilemmas by processing the suggestions made by the participants (Phase 2). Furthermore, we adapted the training by extending the dilemma's beyond the point of decision making. That is, in order to be able to make a proper decision, one needs to take the potential consequences of the decision into account. Therefore, we added the potential *consequences* of each possible decision to the training (Phase 3). Based on additional insight in the athletes' experiences of the materials, we decided to reformat the training dilemmas to make them more appealing (Phase 4).To stimulate the motivation to

participate as well as to enhance information processing, we incorporated a serious gaming element into the training (Phase 5). Lastly, the corresponding assignments were adapted for each of the dilemmas to match the focus on the potential consequences of the decisions faced (Phase 6).

Interview

Through the Anti-Doping Authority the Netherlands, the coordinators of all regional elite athlete organizations (part of the Dutch Olympic Network) were asked to invite one or two of their adolescent athletes for the interview. Participants under the age of 18 required active parental consent. This resulted in a sample of 16 talented athletes (56% female) between 12-20 years old (M = 16.9, SD = 2.37). Participants were involved in various sports, including – but not limited to – cycling, swimming, and tennis.

The interview took place at the participant's home or training facility and was conducted by the second author of this report. At the start of the interview the nature and aim of the interview explained. It was emphasized that the interview was voluntary and that the participant could leave questions unanswered or stop at any time. In addition, it was explained that the interview would be voice-recorded an that the data would be handled anonymously and confidentially. We explicitly mentioned that although the project was in collaboration with the national anti-doping agency, individual data were only accessible to the responsible research team of the Radboud University.

The 18 dilemmas of the original ethical decision-making training were presented to the participants. All dilemmas involved fictitious young athletes in an early career stage who were facing the decision to either use doping or not, or to report the doping use of another person or not (for an overview of the dilemmas, see Elbe, Schlegel, & Brand, 2012). As it was not feasible to have the participants evaluate each of the 18 dilemmas, subsets of the dilemmas had been created. Each dilemma had been evaluated by 5-8 participants. The dilemmas were handed to the participants on paper so that the participant could read along while they were read aloud by the interviewer. After having read the dilemma, participants were asked to voice their initial thoughts. Subsequently, they were asked to rate how realistic they thought the dilemma was on a 10-point scale, ranging from "not realistic at all" (1) to "very realistic". This was followed up by the open questions what needed to be changed to make the dilemma more realistic. Focusing on the decision faced in the dilemmas, participants were asked to indicate what they thought the consequences would be of both decisions (not using doping/reporting someone else's

doping use vs. using doping/not reporting someone else's doping) regarding that specific situation. In addition, participants were asked several questions regarding their ability to empathize with the fictitious athletes and how the format may influence this. That is, they were asked to indicate to what extent they found it hard or easy to position themselves in the dilemmas (10-point scale; 1 = "very hard", 10 = "very easy"); whether they would prefer the dilemmas to be presented in the form of a video in which the athletes tell their story ("yes"/"no"); whether they would be better able to position themselves in the dilemmas if the dilemmas were presented in the form of a video in which the athletes tell their story ("yes"/"no"); to what extent they would find it hard or easy to position themselves in the dilemmas if they would be presented in the form of a video in which the athletes tell their story (10-point scale; 1 = "very hard", 10 = "very easy")

In the next, the different phases in the selection and refinement of dilemmas will be discussed.

Phase 1: Selecting dilemmas

Overall, the 18 dilemmas received an average rating of 7.4 (*SD* = 1.79), with the least realistic dilemma scoring a 5.5 and the most realistic dilemma scoring an 8.7. However, we were in the position to select the 12 most realistic dilemmas for our Ethical Decision-Making Training 2.0. This selection increased the average rating to 7.9 (*SD* = 1.49), with the least realistic dilemma scoring a 7.1. Eight dilemmas reflect the perspective of a talented or elite athlete; the other four dilemmas reflect the perspective of someone from the entourage (coach, physiotherapist, mother, fan). The dilemmas are faced by five female characters and seven male characters, in which they either have the choice to using doping (six times) or to report the doping use of someone else (six times). In five dilemmas the character involved in individual sports and in six dilemmas the character is involved in team sports (in one dilemma the nature of the sport is undefined). A full description of the selected dilemmas can be found in Appendix 1.

Phase 2: Adjusting dilemmas

The selected dilemmas were further improved by adjusting them according to the suggestions made by the participants during the interview. For example, names were changed to represent the Dutch society better (rather than the original German names), the financial support was lowered in one dilemma as it was deemed unrealistically high, it

was mentioned explicitly in several dilemmas that it was clear to the athlete that the substance was doping, prior non-doping attempts were included in some dilemmas to show that the athlete had also tried other means, etc.

Phase 3: Adding decisional consequences

Based on what the participants thought what would happen, we developed descriptions of possible consequences for each of the two choices in each dilemma. That is, we added fictitious outcomes to the decision to use doping/not report someone else's doping use as well as fictitious outcome to the decision not to use doping/reporting someone else's doping use in that specific dilemma. A description of the fictitious consequences belonging to one of the dilemmas can be found in Appendix 2.

Phase 4: Reformatting dilemmas

Of the 16 participants, 11 participants (69%) indicated that they preferred the dilemmas to be presented in the form of a video with the involved athlete telling their story. In line, 13 participants (81%) indicated to expect to be better able to position themselves in the situation if the dilemma had been presented in a video. In terms of ratings, the interviewed participants rated their overall ability to position themselves in the dilemma as it was presented on paper with a score of 6.4 (*SD* = 1.85), compared to a score of 7.2 (*SD* = 1.65) when the dilemmas would have been in the form of a video.

To adhere to the preference of the participants we explored several options to turn the written dilemmas into spoken video messages. Initially we thought of having actors stand in front of the camera and describe the dilemma from their (i.e., the fictitious athlete) point of view. However, we soon found out that the appearance of the actor brought along confounded variables (e.g., attractiveness, age, athletic build). We therefore turned to a more controlled setting: animations. We had all the dilemmas turned into animations in which visuals were used to present and emphasize the story as told by a professional female voice-over. Where it came down to a decision, the text was incorporated in the video as well.

Phase 5: Incorporating gaming element

As a final adaptation to the training, we incorporated a serious gaming element by creating a scoring system that allowed participants to earn points. This gaming element served two purposes: making the training more engaging while stimulating the processing

of the offered knowledge. After having been presented with the dilemma, participants were asked what they thought the athlete would choose to do (in addition to what they themselves would do). After indicating their decision, participants were asked to indicate how certain they were of their decision by bettin up to 7 points. If they guessed the decision of the fictitious athlete correctly they gained the number of points that they had bet; if their guess did not reflect the decision of the fictitious athlete the number of betted points was subtracted from their total score. They made these bets both prior and after having read the outcomes of both decision options. As the decisions concerned fictitious situations, the decision to use doping or not/report doping or not were counterbalanced between the 12 dilemmas. Each training session ended with congratulating the participant with the total number of points earned across the three dilemmas.

Phase 6: Adapting assignments

In addition to the assignments related to the gaming element, we adapted the original assignments to match the focus on the consequences of the decisions that could be made. Specifically, for each dilemma it was first asked to why the presented situation posed a dilemma for the involved character (to probe for understanding of the hard choices that the character faced). Participants were then asked to indicate what they thought the character would do as well as what they would do and why (including the allocating points to their decision). This was followed by the descriptions of the consequences of both choice options. Upon presentation of the consequences the participants were asked to complete assignments which increased in difficulty throughout the training (stating the pros and cons, ranking presented consequences, indicating involved cognitions and emotions). After having done this, they were asked to indicate what they now thought that the character would do plus what they themselves would do and why (including the points allocation). The dilemmas were concluded with the choice supposedly made by the character (counterbalanced between dilemmas) and the points earned through the corresponding assignments. We added screenshots of one dilemma in Appendix 3 to give an idea of how the dilemma and corresponding assignments were presented to the participants.

Testing the Effectiveness of the Ethical Decision Making Training 2.0

Method

Recruitment and participants. The study aimed to recruit adolescent athletes between 12-21 years old with an official Olympic sport status (either elite or talent status). Initially, we focused on the recruitment on individual athletes. We had a short promotion video professionally made to invite the target group (see Appendix 4). In this video we announced our study and its relevance by highlighting the type of dilemmas they could face in their career (feeling you cannot keep you up with competitors who use doping). In addition, we introduced the research team to create a more personal setting. In addition to this video, we also distributed an information letter. Both contained the mentioning of a link to a webpage of the study where participants could sign up for participation (under-aged participants required active parental consent). We further promoted the study among athletes as well as their entourage through an interview on national radio, a presentation at the Dutch Olympic Committee, a presentation at a doping conference for regional and national sports organizations, the mentioning of the study at information meetings of the Anti-Doping Authority the Netherlands, and social media.

Despite our elaborate efforts, this strategy resulted in an insufficient number of participants (therefore deemed as a pilot), upon which we decided to change tactics. We decided to shift our focus from individual athletes to classrooms of athletes. By actively reaching out to the coordinators of all 29 secondary schools targeted at elite athletes in the Netherlands. We were invited to present our study at a general meeting of the overarching school organization. In addition to the original promotion video, we created a second video in which we explained the study design in which we personally addressed the coordinators of the 29 schools. This resulted in the commitment of 21 schools to take part in the main study. The coordinators provided all their students with a talent or elite sport status with the information of the study. The coordinator then provided us with the email addresses of the students who had indicated to want to participate and who received (passive) parental consent.

All parts of the study were conducted online. Participants received a personalized links in their email. The collected data was stored in a safe cloud online; downloaded data for analyses were anonymized.

Procedure.

Measures.[2]

Doping attitude. Doping attitude was measured two separate measures. First, a Dutch translation of the Performance Enhancement Attitude Scale (PEAS; Petrozci & Aidman, 2009). This unidimensional scale consists of 17 items, each presenting a statement regarding doping. Examples are: “Doping is necessary to be competitive” and “Only the quality of performance should matter, not the way athletes achieve it”. Participants are asked to indicate to what extent they disagree or agree with the statement on a 6-point Likert scale, ranging from 1 (“strongly disagree”) to 6 (“strongly agree”). Higher scores represent more positive doping attitudes. The original PEAS has been proven a reliable measure, with an internal consistency ranging between .71 and .91 across various samples (Petroczi & Aidman, 2009).

In addition, doping attitude was measured with a procedure adopted from Lucidi and colleagues (Lucidi et al, 2008). Participants were presented with a stem sentence **“**Use of illegal substances to improve sport performance would be…” and asked to express their opinion on the following dimensions: useless/useful, foolish/wise, undesirable/desirable, negative/positive, harmful/beneficial, and advantageous/disadvantageous. Each dimension was coded as a 5-point Likert scale, with a higher score representing a more positive attitude towards doping. The item scored were aggregated into a single mean score. Based on our sample of talented athletes, we decided to adjust the stem sentence to reflect only the sport performance outcome rather than also the physical appearance outcome – as was the case in the original measure of Lucidi et al. (2008) among regular high school students. The reliability of the original measure was α = .85; the reliability of the adjusted scale is α =.75 .This adjustment has resulted in a lower alpha compared to the original scale, but still sufficiently reliable.

The two doping attitude measures correlated .45, so they each did measure other aspects of the doping attitude.

Moral Disengagement. Two relevant measures of moral disengagement were available to us: the Moral Disengagement in Sport Scale – Short and the Moral Disengagement in Doping Scale. Both scales are based on the Social-Cognitive Theory of

[2] The WADA report focuses on the measures as described in the original research proposal. Information on additional measures is available from the authors.

Bandura (1991), which posits that people refrain from conducting immoral behavior due to the anticipation of guilt. His theory accounts for the fact that people do not always act according to their moral values, by positing that people can bypass self-sanctioning by disengaging from their moral values using mechanisms of moral disengagement (Bandura, 1991). Eight mechanisms have been identified: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, distortion of consequences, dehumanization, and attribution of blame.

Moral Disengagement in Sport. The Moral Disengagement in Sport Scale - Short (MDSS-S; Boardley & Kavussanu, 2008) was used to measure the extent to which the participants disengage from their moral values specific to sport. The MDSS-S is an 8-item unidimensional questionnaire derived from a multidimensional 32-item questionnaire (Moral Disengagement in Sport Scale, MDSS; Boardley & Kavussanu, 2007), with each item representing one of the eight mechanisms of moral disengagement. Examples of the items are: “It is okay for players to lie to officials if it helps their team” and “Players who are mistreated have usually done something to deserve it”. Participants are instructed to indicate the degree to which they agree with each statement on a 7-point Likert scale, anchored by “strongly disagree” (1) and “strongly agree” (7). The higher the score, the more participants indicate to morally disengage in sport.

Moral Disengagement in Doping. The Moral Disengagement in Doping Scale (MDDS; Kavussanu, Hatzigeorgiadis, Elbe, & Ring, 2016) was used to measure moral disengagement in doping specifically. The scale consists of 6 items, representing the moral disengagement mechanisms moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, and distortion of consequences (the mechanisms dehumanization and attribution of blame were deemed irrelevant to the issue of doping, see also Lucidi et al., 2008). Examples of moral disengagement in doping are: “Doping is alright because it helps your team” and “A player should not be blamed for doping if everyone on the team is doing it”. Similar to the MDSS-S, participants are instructed to indicate on each of the MDDS items their agreement on a 7-point Likert scale, anchored by “strongly disagree” (1) and “strongly agree” (7). Higher scores indicate higher levels of doping moral disengagement.

Achievement Motivation*.*

In addition to the outcome variables of interest, athletes’ achievement motivation was measured using the Perception of Success Questionnaire – Children’s Version

(POSQ-CH; Treasure & Roberts, 1994a, 1994b). This 12-item questionnaire is comprised of two subscales – one focusing on *task orientation* (6 items) and the other one focusing on *goal orientation* (6 items). The items are preceded by the stem sentence “When playing sport, I feel most successful when…”. Examples of task orientation items are “I try hard” and “I succeed at something I could not do before”; examples of ego orientation are “I beat other people” and “I accomplish something others cannot do”. Participants are asked to indicate the extent to which they agree with each item on a 5-point Likert scale with the anchors “strongly disagree”(1), “neutral” (3), and “strongly agree” (5). Higher scores indicate stronger task orientations and ego orientations respectively.

Results

Descriptive statistics

The pre-measure questionnaire was completed by 804 participants (experimental group n=653, control group n=151): 457 male and 347 female athletes participated with a mean age of 14,82 years (SD 1,50). The type of sport was 'Individual' (n=209), 'Team' (n=471), or 'Both Individual and team' (n=109). Participants were active in different sports, among which soccer, basketball, rugby, field hockey, tennis, gymnastics, ice-skating, volleyball, swimming, track and field. All sport levels that were mentioned in the introduction section were present; 'promising, national talent, international talent, high performing status, selection status, A-status'.

In Table 1, the means, standard deviations, and correlation matrix of all respondents on the pre-measure (n=804) are presented.

The doping attitude (PEAS) had a mean value of 1,87 (on a 6-point scale, SD .62 and sum score of 31,56 ± 10,54), implicating that the attitude to performance-enhancing drugs is relatively low; representing a negative view on doping use.

The average score on moral disengagement in sport was 2,88 (SD 1,04) on a 7-point scale, indicating a relatively low score. The moral disengagement doping score was even lower with hardly any variance, *m* = 1,81, SD = ,87. This was confirmed by our second measure of the doping attitude (Lucidi; *m* = 1,67, SD .67 on a 5-point scale).

As for achievement motivation, the ego orientation had a mean score of 3.48 (SD .88) and task orientation had a mean score of 4.39 (SD .75) on a 5-point scale, both indicating high scores. In other words, the talented athletes showed strong orientations towards improving one's performance as well as being the best.

The correlation of the two moral disengagement scales (MDSS - sport; MDDS – doping) was .36, indication a moderate correlation. The same goes for task- and ego-orientation, they were moderately correlated (*r* = .32). Noticeable is the correlation between moral disengagement in doping and the two doping attitude measures (*r* = .49 and *r* = .43). The correlations between the study variables and control variables was low (between *r* = .01 and *r* = -.30).

Table 1.
Correlation matrix, means, and standard devations of the pre-measure study variables (n=804, experimental and control group).

	1	2	3	4	5	6
1. Doping attitude (PEAS)	(.82)					
2. Doping attitude (Lucidi)	.45**	(.75)				
3. Moral Disengagement Sport (MDSS)	.29**	.24**	(.73)			
4. Moral Disengagement Doping (MDDS)	.49**	.43**	.36**	(.73)		
5. Ego orientation	.03	.06	.18*	-.01	(.88)	
6. Task Orientation	-.11**	-.10**	-.07*	-.09*	.32**	(.92)
Control variables						
7. Age	.00	.06	.00	-.04	.17**	-.12**
8. Gender	-.15*	-.11**	-.30**	-.11**	-.12**	.08*
9. Type of sport	.06	.05	.28**	.08*	.02	-.02
10. Sport level	.01	.02	.00	.05	-.03	.06
Mean	1.87	1.67	2.88	1.81	3.48	4.39
SD	.62	.67	1.04	.87	.88	.75
Range	1-6	1-5	1-7	1-7	1-5	1-5

Note. Figures in parentheses are alpha reliabilities. Gender (1-male,2-female), Type of Sport (1-individual,2-team), Sport level (1-lower level status to 6-higher level status).
* $p < .05$.
** $p < .01$.

Attrition and selectivity analyses

To test whether the response after the baseline was selective, the characteristics of the respondents that completed the pre-measure were compared to those who completed the baseline questionnaire but did not complete the follow-up measures (Table 2). The respondents who only completed the pre-measures, and not the follow-up measure, were somewhat younger, had a marginal higher sport level score (still within the same category, that is ‘national talent’), a higher score on both moral disengagement in sport and moral disengagement in doping (also, both scores in the same category). In other words, we found some minor differences in gender, sport level, and mean score on moral disengagement in sport and in doping.

In total, 395 respondents filled out the pre- and post-measures. The control group consisted of 88 respondents that only completed the measures but not the training. Of the 307 respondents in the experimental group, most completed the four sessions (n=268,

response rate 87,3%). Thirty-three respondents completed three sessions, 6 respondents completed three sessions.

Table 2.
Selectivity analysis based on the pre-measure.

		Respondents with baseline data only		Respondents with follow-up measure		Sign. (*p*)
		n =302-408		n = 395		
Variable	*Range*	*M*	*SD*	*M*	*SD*	
Age		14.90	1.55	14.60	1.70	**.05**
Gender (1-male, 2-female)		1.4		1.5		.08
Sport level	1-6	2.46	1.69	2.00	1.56	**.00**
Doping attitude (PEAS)	1-6	1.80	.60	1.86	.63	.31
Doping attitude (Lucidi)	1-5	1.64	.65	1.65	.69	.88
Moral Disengagement Sport (MDSS)	1-7	2.91	.96	2.69	1.07	**.02**
Moral Disengagement Doping (MDDS)	1-7	1.82	.98	1.65	.69	**.04**
Ego orientation	1-5	3.59	.89	3.50	.85	.28
Task Orientation	1-5	4.45	.62	4.46	.70	.94

Note. Response samples vary due to missing data.

In the next paragraph, the analysis of the intervention effect is presented.

Intervention effects

In Table 3, the descriptives and intercorrelations are presented of the respondents that completed the pre- and post-measures.

As outlined in the introduction and method section, our intervention consisted of four sessions in which three different dilemmas with accompanying assignments were presented to the talented athletes.

Table 3.
Correlation matrix, means, and standard deviations of the study variables on the pre- and post-measure (n=395, experimental and control group).

	1	2	3	4	5	6	7	8	9	10	11	12
Time 1												
1. Doping attitude (PEAS)	-											
2. Doping attitude (Lucidi)	-.43**	-										
3. Moral Disengagement Sport (MDSS)	.36**	. 23**	-									
4. Moral Disengagement Doping (MDDS)	.51**	.43**	.35**	-								
5. Ego orientation	.02	.07	.19*	-.04	-							
6. Task Orientation	-.12**	-.10**	-.10*	-.09*	.26**	-						
Time 2												
7. Doping attitude (PEAS)	.48**	.30**	.33**	.31**	.08	-.05	-					
8. Doping attitude (Lucidi)	.39**	.48**	.22**	.28**	.02	-.02	.54**	-				
9. Moral Disengagement Sport (MDSS)	.30**	.22**	.55**	.18**	.11	-.04	.40**	.23**	-			
10. Moral Disengagement Doping (MDDS)	.44**	.37**	.30**	.47**	.00	-.06	.60**	.47**	.44**	-		
11. Ego orientation	.04	.01	.10*	-.08	.54**	-.05	.02	.02	.13*	-.04	-	
12. Task Orientation	-.13**	-.08	-.14*	-.14*	.01	.20**	-.16**	-.10	-.02	-.12*	.42**	-
Control variables												
13. Age	.03	.10	.06	-.04	.20**	-.10**	.01	¤	.04	-.01	.17**	-.01
14. Gender	-.14*	-.08**	-.30**	-.11**	-.13**	.03	-.16**	-.08	-.19**	-.16**	-.13**	.04
15. Type of sport	.06	.05	.29**	.08*	.07	-.01	.09	-.00	.19*	.07	.08	-.00
16. Sport level	-.04	-.02	.00	-.04	-.04	-.01	.07	-.04	-.01	.03	-.06	.08
Mean	1.87	1.67	2.76	1.76	3.46	4.46	1.79	1.55	2.61	1.76	3.40	4.36
SD	.62	.67	1.06	.78	.82	.68	.80	.68	1.13	.94	.96	.90
Range	1-6	1-5	1-7	1-7	1-5	1-5	1-6	1-5	1-7	1-7	1-5	1-5

Note. Gender (1-male,2-female), Type of Sport (1-individual,2-team), Sport level (1-lower level status to 6-higher level status).
* p < .05., ** p < .01.

Our aim was to investigate what the effect of an advanced ethical decision making training (ADMT 2.0 versus a control group) is on adolescent athletes' doping attitude, moral disengagement, and achievement motivation.

For the analysis of the effects, we selected the total group of respondents in the experimental condition that completed three or four sessions (n = 308), to ensure exposure to the training program. A repeated measure analyses of covariance (ANCOVA) was performed for the dependent variables doping attitude (PEAS and Lucidi), moral disengagement (sport and doping) and achievement motivation (task orientation and ego-orientation). The condition 'group' (experimental versus control) served as between-subject-factor, and 'time' was selected as the within-subject factor (baseline and after the intervention - or waiting time - period).

There was no main effect of time nor condition for all study variables (all p's > .05). No significant group x time interaction was observed for the doping attitude $F(1, 387) = 1.843$, $p = .175$, $\eta^2 = .005$. Moreover, we found no significant group x time interaction for the doping attitude (Lucidi) $F(1, 387) = 1.842$, $p = .175$, $\eta^2 = .005$, moral disengagement in sport $F(1, 387) = 1.015$, $p = .314$, $\eta^2 = .003$, moral disengagement in doping $F(1, 387) = 1.851$, $p = .174$, $\eta^2 = .005$, ego orientation $F(1, 387) = 0.410$, $p = .522$, $\eta^2 = .001$, or task orientation $F(1, 387) = 0.379$, $p = .256$, $\eta^2 = .003$. In sum, the repeated measure ANCOVA revealed no significant effects of the training program on the outcome variables, as can be seen in Table 4. An additional ANOVA without the covariates was performed and showed that the results were identical to the repeated measures ANCOVA. We tested whether the results differed for those with three or four sessions and found no effects.

Table 4.
Effects of the ethical decision training program.

		Intervention Group (n-303)		Control group (n=88)		Intervention effect	
		Means		Means		(Group*Time)	
Variable	**Range**	**Pre-measure**	**Post-measure**	**Pre-measure**	**Post-measure**	***p***	η^2
Doping attitude (PEAS)	1-6	1.90	1.79	1.81	1.80	.175	.005
Doping attitude (Lucidi)	1-5	1.70	1.55	1.59	1.55	.175	.005
Moral Disengagement Sport (MDSS)	1-7	2.82	2.66	2.49	2.46	.314	.003
Moral Disengagement Doping (MDDS)	1-7	1.82	1.78	1.59	1.69	.174	.005
Ego orientation	1-5	3.45	3.38	3.46	3.44	.522	.001
Task orientation	1-5	4.46	4.33	4.44	4.48	.256	.003

Note. Age and gender at baseline included as covariates. Intervention effect: p-values and η^2 based on univariate within-subject test, Wilks' Lambda.

Discussion

In our intervention study on ethical decision making, we examined the effects of a four wave online dilemma training on the doping attitude of young, talented (elite) athletes, and on other outcomes: moral disengagement (in sport and in doping), ego- and task orientation. We compared the intervention results with the results of a control group that was not exposed to the online dilemma training and only completed the online questionnaires at two times (pre- and post-measure).

The online advanced ethical decision making training consisted of four sessions with three doping-related dilemmas per session. The dilemmas differed in type of sport (individual/team sport), content and perspective (individual decision to dope or not, the suspicion of doping use of a teammate, the confrontation with a parent that found performance enhancing drugs in their family house and so on), and in the different assignments related to the dilemma. We expected that the dilemmas on ethical decision making would favourably impact the doping attitude, moral disengagement, and achievement motivation (task- and ego-orientation). Our hypotheses that the advanced ethical decision making training (ADMT 2.0 versus a control group) would have a favorable effect on adolescent athletes' doping attitude, moral disengagement, and achievement motivation could not be confirmed by the results.

There are several potential explanations for the absence of a favourable intervention effect: 1) a 'floor effect' (already favourable scores on doping attitude and moral disengagement before the intervention was offered, so little room for improvement) 2) exposure to the intervention too early in the athletes' career (therefore not susceptible for the effect), and 3) the composition of our training program (number of sessions). We will discuss each potential explanation below.

First, the absence of an effect of our intervention program on the outcome variables might be a result of a 'floor effect': the scores on the doping attitude were already very low before athletes were exposed to the intervention, and therefore it was impossible to lower the scores even further (especially in this phase of the athletes' career). However, this does not imply that the intervention has no value in the long run: it may serve as a tool for primary prevention, preventing young athletes from developing positive attitudes towards performance enhancing drugs in due course. Future studies are advised to incorporate follow-up measurements of key variables to examine whether intervention groups show

stable low doping attitudes over time, whereas control groups may become more and more open to performance enhancing drugs.

Second, but related to the discussion above, the current study composed of a relatively young sample of adolescent athletes (mean age = 14 years). Although theory suggests that the brain develops rapidly between the age of 12 and 21 and would therefore be sensitive to ethical training during adolescence, implementation of the intervention programme at the age of 14 ('early adolescence') may simply be too early to evoke large short-term effects on doping attitude. Furthermore, the doping attitude sum score on the PEAS scale in this study was relatively low (Mean sum score = 31,56 (sd = 10.54, on a 17 - 102 scale), especially when compared to other studies (46.12 ± 11.43, Sekulic et al., 2016; 40.1 ± 12.93, age group 14-15, Skinner, Moston, & Engelberg, 2012). This indicates that even before being exposed to the intervention programme, the young athletes in our Dutch sample had hardly, or even no, intention to use performance enhancing drugs (as we outlined in our previous point). As a comparison, the athletes in the study of Sekulic et al (2016) were older (*m* = 22 years) than the athletes in our study (*m* = 14 years) which might explain the differences in results: older athletes have spent more years in competition, possibly encountered more tempting situations, and as adults, they feel free to make their own doping-related decisions These divergent findings among age groups might be an indication that our target group (12 - 21 years, with a mean of 14 years) was not susceptible enough for our online ethical training intervention program from a brain development perspective (the development of the prefrontal lobe for instance) or it might indicate that the final set of respondents was perhaps too young to experience- or think about doping-challenging situations: it may just not have been relevant for them yet. In the latter case, our study contributes to preparing for future situations. Based on the comparison with other studies, it seems that the doping attitude is increasing coincidently with age. In the light of a prevention framework, it is important to apply preventive interventions at the right moment in adolescents careers, before they open up to banned performance enhancing drugs. This implies a focus on primary prevention, i.e. preventing young athletes to become susceptible to performance enhancing drugs, instead of reducing already existing doping-attitudes (= secondary prevention). Although the initial aim of the current intervention project was secondary prevention (reducing doping attitudes), it could well be that, in hindsight, a more suitable orientation would actually have been 'primary prevention' in terms of preventing opening up to performance enhancing drugs. From this primary prevention perspective, our program may not have

been offered too early in athletes careers. Follow-up measurements would be needed to establish long-term primary preventive effects.

A third explanation for the absence of intervention effects may relate to the composition of our intervention program. Our ethical decision making training program was a replication of the training program that was developed in a previous study (Elbe, Schlegel & Brand, 2012), but was adapted according to the authors suggestions, recent empirical studies on educational and anti-doping programs, and other suggestions in recent literature (e.g., adding serious game elements), and based on our interviews with adolescent talented athletes. In the study that we replicated, the results demonstrated a moderate effect and authors suggested a reduced number of sessions. So, to enhance feasibility of participation, we decided to reduce the number of dilemmas from the original number of 18 to 12, and limit the number of sessions to four sessions with each three dilemmas. Potentially, this reduction of dilemmas and sessions hindered the exposure to the ethical decision making. On the other hand, we found no differences between the respondents that completed three versus four dilemma sessions, so this does not corroborate the assumption that exposure to more dilemmas and assignments would have made more impact. Also, we noticed that the attrition on the pre- and post-measures was high in our study and we think that it might even be higher with more sessions. Our effort, and the effort of the school coordinators, to motivate the athletes to fill out questionnaires and to take part in the sessions was high. The texts in our study invitations were positive and motivating, and some schools decided to work on the program in the class room (still on voluntary basis) to support the response rates and because they found the topic and content important. We were able to reach an acceptable response to both the questionnaires and sessions (response rate 87%), but considering all our efforts to ensure continuous participation of respondents, we think that more sessions are not feasible, at least not in this age group and in this context. In future studies, it would be wise to test whether the number of sessions (and dilemmas) that we selected compared to less sessions would lead to significant changes in outcome variables.

Our experiences and recommendations for future projects

For future studies, it might be wise to follow our second strategy to recruit respondents, namely via secondary schools and high schools (schools with talented athletes) and to develop an educational set of lessons to support the ethical decision making program. From a practical viewpoint, schools offer a context in which young athletes can be

stimulated to complete questionnaires or other intervention sessions during school hours, which is a much more motivating context for participation than individual participation in the intervention during free time. This way, the response rate can be higher and attrition lower as opposed to the recruitment of respondents via sports federations, national anti-doping organization, or social media. As schools have the same objective in striving for the development of high moral standards and low moral disengagement and doping attitude, this recruitment method closely fits the researchers' objective to develop and perform empirical intervention studies. Moreover, with a supporting set of lessons, following athletes' moral and anti-doping development over time is more feasible: if lessons are developed for different age categories, a yearly 'check-up' would be possible. This check-up is beneficial for study purposes (longitudinal research, enabling examining primary preventive effects of the intervention), but mostly for the athletes themselves: they get confidential feedback on whether they are at risk for the use of banned substances or methods and learn how to cope with difficult situations.

As for technological innovations in the program, respondents in our study could not use mobile devices (mobile phone, tablet) to fill out questionnaires and follow the training program. We believe that this was beneficial for the readability of the questionnaires, dilemmas, and assignments. However, as the respondents participated in competitions or training programs abroad during the study period, they had limited access to a computer and would prefer a mobile solution. We recommend that the impact of mobile versus large screen questionnaires and study material is explored in a future project. As adolescents are used to mobile screens, it might make no difference and may stimulate participation. Furthermore, we advise to use technological innovations, such as animations and clips, and to develop a serious game with different levels to challenge the respondents and enhance learning and prevention effects. Special attention should be given to privacy regulations (recently introduced in Europe) to ensure safety of personal data and the storage of privacy protected information.

Before starting the intervention study, we checked the relevance of the content and focus of the dilemmas by means of interviews in the same age group and adapted the dilemmas based on the results and suggestions of the adolescent interviewees. However, we cannot rule out that the dilemmas and assignments were not in line with experiences in training and sport of the young athletes included in the intervention group. We recommend to investigate this further via comparison with experiences of older athletes and more qualitative studies on challenging situations in each age group. The number of sessions,

but also the planning of the intervention sessions needs to be discussed in relation to the findings of our intervention study. We designed our study in a way that respondents in the experimental group had weekly sessions of our ethical decision making training. Maybe, this planning of sessions was too intense in a too short period of time whereas more time between sessions would have increased chances of finding significant changes. Our idea was that in this 'vacuum' of weekly sessions, respondents would be more aware and open to the content of dilemmas but also willing to cooperate. In their busy schedule, the ethical decision making training might have had less attention if we had planned biweekly or monthly. Another point is that we introduced our training program in their regular study scheme without specific lessons supporting the significance of the program. For future studies, we advise to prepare a set of classroom lessons concerning the topic at hand and to schedule time to fill out the questionnaires and time to address the dilemmas in the session. This will result in higher response rates and less attrition.

We strongly advocate follow-up measurements of doping attitude and moral disengagement, for instance after 6, 12, and 24 months to investigate developments over time and to explore whether the intervention has a primary prevention effect. The use of implicit measures of the doping, such as the implicit association test to measure athletes' attitudes on doping as developed by Brand, Heck, and Ziegler (2014), is recommended in addition to explicit measures.

The current study was focused on the individual athlete's experiences, with the aim to strengthen their personal ethical decision making. For an overview of our use of the results, see Appendix 5. For the future, we recommend to expand research to the influence of the members of the social entourage on the individual decision to use, or stay away from, banned performance enhancing drugs.

To conclude, we have made several successful adaptations of the original program and invite future researchers to use our study material[3]:

- Interviews with members of the target group gave us qualitative information and feedback on the dilemmas in order to customize and refine our ethical decision making program.
- The training program was made more attractive with visual (animations), sound (voice-over), and serious game elements. We also obtained more variation with different

[3] The study material is available via the authors and via de Anti-Doping Authority the Netherlands.

assignments in each session. One of the authors of the study that we replicated, used our material in her new study as it was valued as appealing and useful.

- Participants seemed to enjoy (parts of) the program, as we could read in the answers to open ended questions. Coordinators of the secondary schools were also enthusiastic about the program and the aim to educate on ethical decision making and morality, and very much willing to cooperate, also in future studies.
- Our training programs contributed to value-based education and primary prevention. The participants in this study showed low doping attitude and low moral disengagement and our program might have prepared them for future challenging situations and dilemmas in their sport career. As our program will be part of the national talented athletes training program of NOC*NSF, more (adolescent) elite athletes will be able to benefit from it.

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Appendix 1. Dilemmas ethical decision making training

1. Lynn

Lynn is a fanatic cyclist. She is currently enrolled in a sponsoring program for young cyclists. This gives her the best chance to practice her sport. She is allowed - together with the rest of the team - to use a car and medical advice. She also receives 200 euros every month to spend freely. She trains fulltime, so Lynn barely sees other people. That is why she regards her teammates as her best friends.

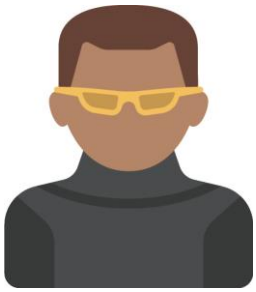
In recent months, Lynn has made little progress in cycling. She is not frustrated by it, but is extra motivated to train even more intensively. Despite her efforts, her coach recently told her that the gap between Lynn and her opponents is getting too big. If Lynn cannot reduce this discrepancy, she can't stay in the sponsor program anymore. Lynn can't imagine leaving the group and having to go back to her old club.

After another two weeks of competitions, her performance is still not at the level that it should be. Then a friend, who is also a fanatic cyclist, asks if she might want to try a performance-enhancing drug. He can arrange that for her. Lynn is desperate and wants to stay in the sponsor program. She starts considering it ...

2. Tim

Tim has been training since childhood. Last year, he even almost won a national tournament in karate. For some time now, Tim is having a knee injury due to a cycling accident. This is a major hindrance for Tim. Nevertheless, he picked up the training immediately after the accident, so that he would have enough time to compete for a top-position in this year's competition.

Yet, during the first few training sessions he had a lot of pain in his knee and the pain got even worse afterwards. Tim told his coach that the pain was too heavy to continue training. The coach told Tim not to give up and that he would help him. A week later he gives Tim a box of painkillers that would reduce the pain. The coach says that he has discussed the pills with the sports physician so Tim would not have to do that. It was better if Tim did not discuss this with anyone. Tim gets the instruction to start taking the pills on that day. In the next weeks, Tim has to reduce his medicine intake step-by-step and hopefully, at some point, he will no longer need the painkillers. Tim is not sure if he should follow the coach's instruction.



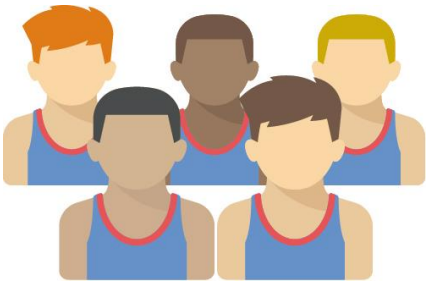
3. Maikel

Maikel and Thomas have been training together for years. Canoeing is their life. They are friends and successful in both national and international competitions. Because Thomas does not seem to take the training as seriously as Maikel, they sometimes argue. Lately, this occurs more often as the performance of Thomas is lagging behind. The coach wants to disassemble their team in order to increase the chance that Maikel reaches the top. Thomas is disappointed because he does not want to lose his friend.Thomas starts training harder in the months that follow. It results in an improvement of performance, but according to the coach it is not enough. Maikel knows that Thomas is considering to use banned performance-enhancing drugs. He also knows that their coach is strongly against doping. Maikel confronts Thomas and says he should talk to the coach instead of using doping. Thomas does not listen. Maikel wonders whether he should tell the coach himself about Thomas' intentions.

4. Caroline

Judo is the world to Caroline. For every tournament, she trains extra hard to get her weight on 48 kilos, at this time she weighs almost 50. Her ultimate dream is to take part in an elite sport educational program, but there are many opponents in her weight class. In the heavier weight class, she does not stand a chance, so she has to stay in the 48 kilo class.

In a few days there will be a qualifying tournament, but this time Caroline will not succeed in getting the required weight. She quickly lost some weight by diets and running, but she wasn't able to get rid of the last few kilograms. She eats close to nothing, yet she does not lose weight quick enough. On the Internet, Caroline reads that diuretics (also called water pills) help to lose weight rapidly and that they can be ordered without a doctor's prescription from an online pharmacy. She ignores the possible side effects and orders the pills because she is desperate to lose weight. Caroline knows that the pills are on the doping list, but so far, she has never been tested so that will not happen now either. From the moment she had the pills in her possession, she wonders if she should or should not use the pills to get under 48 pounds when weighing. The weighing is in 2 days.



5. Nick

Nick has been a basketball coach for years. He has lead his current club to national top level and has won several championships with his team. But lately, talented players are missing in his team: top players are rare. One of his players, Jason, is very promising but relies too much on his talent. Nick constantly tells him that he needs to train more often.

In the last months, Nick has been amazed of how quickly Jason has grown in strength and weight. He does not believe that his nagging about training has indeed caused Jason to start training more and with this result. Last year another player from the team tested positive and was suspended. Nick then talked about doping with other players of the team, including Jason. They all promised never to use doping.

Yet Nick has the idea that the change of Jason is not natural and that he uses doping. When he confronted Jason with his suspicions, Jason seemed angry but at the same time somewhat nervous. He would never do such a thing! The coach could just trust him anyway? Jason explained his changed appearance by telling that he is heavily involved in weightlifting together with a friend. Nick keeps doubting whether Jason is telling the truth and wonders if he should sign Jason up for a doping test.

6. Karin

Karin has been active in athletics for more than 10 years. She is by far the best of her team and normally she is the only one of the team who has a chance for a podium position. But during the previous game her performance was far below her level. In the two subsequent matches, she also finishes in the bottom half. Her coach and parents try to support her, but also put pressure high by saying that she really has to get back on her former level. Karin wants her coach and parents to be proud of her. In order to be able to meet their expectations and not disappoint them, she wants to ensure that her performance at the next competition is extra good. Despite her intensive training, Karin is afraid that she will fail again. That is why she buys an illegal drug from a friend that is meant to improve performance during competitions. When tidying up, Karin's mother discovers the drug between Karin's things. When her mother tells her what she has found, Karin is startled. Her mother has been a top athlete herself and claims to understand that the pressure on Karin is becoming too much. She makes it clear that she is against the use of doping. What should Karin do now?

7. André

André is the physiotherapist of Susan. Susan has achieved a lot despite her age of 17 years. She has been active with figure skating since she was four years old. Over the years she has won many national and international titles, but due to hard training Susan always has pain in her hips and knees. During a medical checkup, severe damage on her joints has been observed. The doctor advises Susan to stop figure skating to prevent further damage Susan does not want to think about quitting and decides to visit her physiotherapist André more often.

André knows that Susan was bothered by her hips and knees, but was shocked by the cracking sounds coming from Susan's joints during the exercises he told her to do. When the pain is no longer bearable, Susan tells the truth to André in tears. André is shocked to learn that she has so much pain and is taking so many painkillers - much more than what is healthy and what is allowed according to the doping regulations. The only thing that Susan wants is to participate in the Olympics, but André says she also has to be able to walk when she is 20. He is considering discussing the situation with Susan's coach, but Susan says he would destroy her life if he did.

8. Jennifer

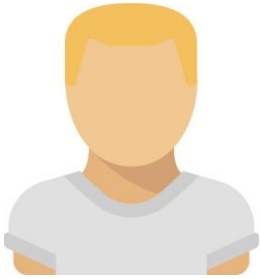
Jennifer is a talented gymnast, but she still has not achieved great success. She does not understand how that is possible, because she trains often and very hard. She wants to be selected for the national team, but she did not achieve the desired result with the previous try-out. Her coach, teammates and family doubt whether she has it.

Jennifer wants to prove to everyone that she can do it and start training harder than ever. It still does not lead to the success that she so desires. Her teammate Sanne was selected for the national team last time. Without Sanne knowing, Jennifer sees that after one of the trainings, Sanne injects something into her belly. Jennifer can have a good look at it and looks for the product on the internet later that day. It is a performance-enhancing product that is on the doping list. It surprises Jennifer how easy you can order it on the internet. Jennifer is desperate to join the national team, but has a hard time deciding whether to do this with doping or not.

9. Peter

Peter is a big fan of the national volleyball team and of his neighbor Annemarie. Annemarie is a professional volleyball player and has been part of the national team since last year. She manages to follow the full training schedule, but lately she suffers from severe headaches. When she complains to her mother about migraine, her mother gives her a pill that works well against the headache. Annemarie takes the pills regularly and has quickly become accustomed to the nice feeling that the pills give her. She starts using them more and more often. Peter often sees Annemarie both at home and on TV. On television and in the gym Annemarie always seems so fit and powerful, but at home she looks tired and exhausted.

One day he confronts Annemarie with this and she tells him about the migraine pills. Annemarie says that the pills are allowed within sport in small quantities. She takes almost twice as much as allowed. Peter asks her to stop taking so many pills. Annemarie thinks Peter is not in the position to tell her what she can and cannot do. Peter is considering making a report on the behavior of Annemarie at the National Doping Authority.



10. Richard

Richard is part of the sports talent program of his secondary school where he can combine school with his top sport career. Richard has a morning training every day before the first lesson starts. In the afternoon, after school, he has a second training. Richard also gets extra lessons because he cannot keep up with the rest at school. Although Richard is exhausted after such a long day, he has trouble to fall asleep at night because he has too much to his head. One evening he joins a number of his friends to a club. One of them offers Richard a blue pill. His friends, who do not have the ambition to become elite athletes, swallow pills like this when they go out and say that there is no harm. Richard knows that the blue pill is on the doping list, but hesitates anyway. At this moment he wants nothing more than to relax and forget all the stress.

11. Michelle

For years, Michelle and Jenny have been training together on the same team and competing in the same competitions. Despite their rivalry in snowboarding, they are best friends and even share an apartment. Michelle and Jenny are both very successful, but at the moment Jenny is really in top form and she always achieves high scores. Michelle admires Jenny's development and increases the intensity of her own training, but she still does not reach the high scores of her girlfriend.

They always cycle to the training together, but Michelle really has a headache that day and decides to stay home. She knows that Jenny bought a box of paracetamol a while ago and is looking for it in Jenny's room. It is stuck in the one drawer where she keeps all her make-up and vitamin pills. There Michelle indeed finds the paracetamol but she also finds something she did not expect: a syringe with a needle and a bottle of liquid. Michelle knows for sure that it is doping. She is furious and confronts Jenny immediately when she comes home from the training. During the heated discussion that follows, Jenny makes it clear that she does not intend to stop using the drug. Michelle does not know whether or not to tell their coach the doping use of her best friend.

12. Katja

Katja is desperate. For years she has been swimming at national and international level. She has won the National Championships several times and was third in the European Championships for juniors. Recently the performance of its competitors has improved enormously, and in a very short time! How can Katja keep that? She wants to stay in the national team in the hope of maintaining her level and her sponsor. Without a sponsor, Katja would no longer be able to participate at the professional level.

Katja discusses the situation with her coach. The coach indicates that he has for a while suspected that Katja’s direct competitors use performance-enhancing tools. Katja would only be able to keep track of their performance if she also uses these resources herself. The coach also prefers to see it differently, but if Katja wants to get to the real top, she has to talk about it. Katja wants nothing more than to come to the real top and thinks carefully about what her coach has said

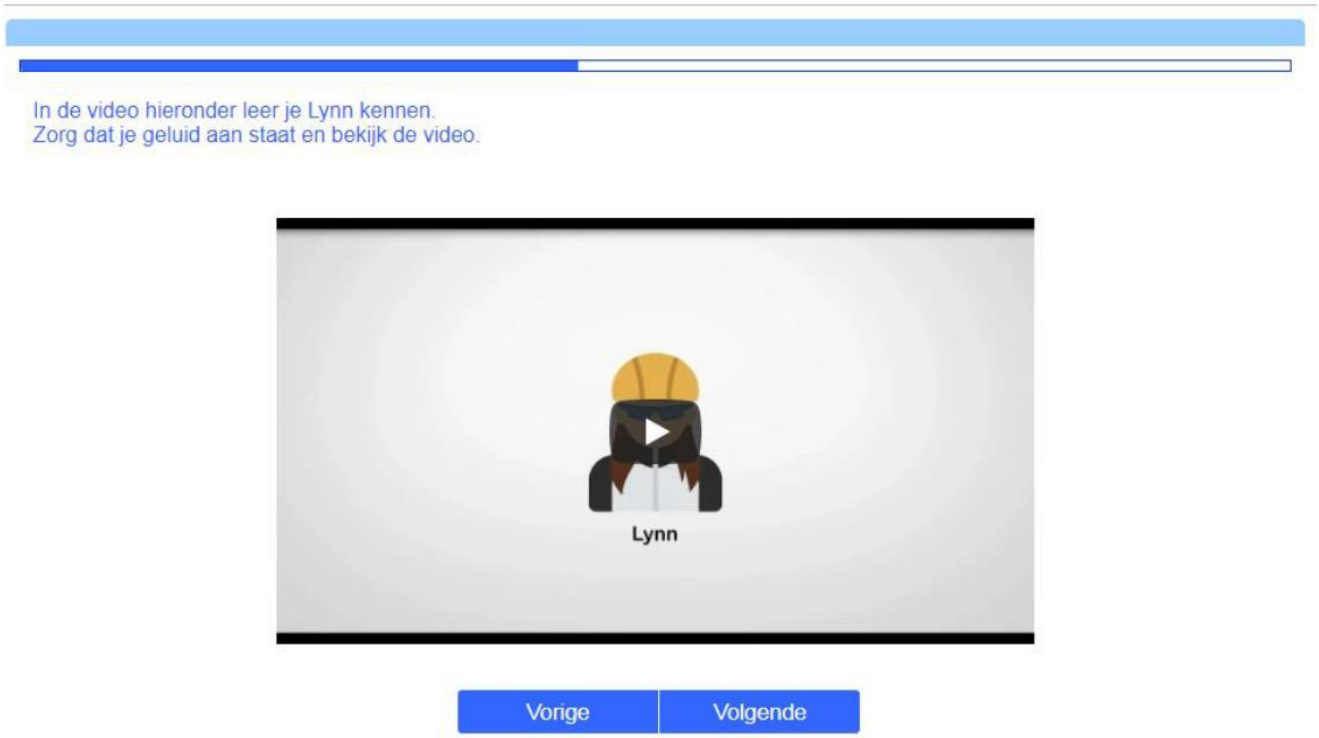
Appendix 2. Description of fictitious consequences

That afternoon she orders the substance. She thinks it's expensive, but if it works it will be worth it. After the package is delivered she inspects the product. It's actually quite frightening to inject something like this into your own body. How should she do this? She follows the instructions provided with the package and injects the substance. She really wants to be the best and sees no other way than doing it like this. In the following weeks she doesn't see any improvement in her performance. She decides to increase the dosage. A weeks after that she starts to get really severe stomach aches and experiences heart palpitations. Could this be caused by the substance? Her performance hasn't improved. She has spent a lot of money. She immediately stop staking the substance, but she is worried about her health.

Jennifer really wants be at the top. But not like this. She discusses her frustration with her coach and other members of the support staff. They suggest that she should spend some time abroad, training under a renowned trainer. This will be expensive, but Jennifer really wants to do it. Together with her coach she discusses the situation with her sponsors. With help of her sponsors Jennifer is able to start training abroad. She notices that the totally different strategy and inspiring surroundings help her improve her performance. She feels stronger than ever: both mentally and physically.

Appendix 3. Example of dilemma presented to participants

An example of the training program (in Dutch) with the fictitious outcomes of the first dilemma is depicted below. All materials are available via the authors and the Anti-Doping Authority the Netherlands (Dopingautoriteit).



Nu volgen er een aantal vragen over de situatie van Lynn.

Om goed antwoord te kunnen geven, staat de tekst van de video steeds onderaan op elke pagina (in groen).

Waarom is de situatie zo moeilijk voor Lynn? Waar moet ze tussen kiezen?

Hoe realistisch vind je deze situatie? (1 staat voor `Helemaal niet realistisch`; 10 staat voor `Heel erg realistisch`)

1 2 3 4 5 6 7 8 9 10

Lynn is een wielrenner in hart en ziel. Momenteel zit ze in een sponsorprogramma voor jonge wielrenners. Dit geeft haar de beste kans om haar sport te beoefenen. Ze mag – samen met de rest van het team - gebruik maken van een auto en medisch advies. Ook krijgt ze elke maand 200 euro om vrij te besteden. Ze traint fulltime en daardoor ziet Lynn amper andere mensen. Ze beschouwt haar teamgenoten dan ook als haar beste vrienden.

In de afgelopen maanden heeft Lynn weinig vooruitgang geboekt in het wielrennen. Ze raakt er niet door gefrustreerd, maar is juist extra gemotiveerd om nog intensiever te trainen. Ondanks haar inzet heeft haar coach haar laatst verteld dat het gat tussen Lynn en haar tegenstanders te groot aan het worden is. Als Lynn dit gat niet kan verkleinen, kan ze niet in het sponsorprogramma blijven. Lynn kan zich niet voorstellen de groep te moeten verlaten en terug te moeten keren naar haar oude club.

Na nog eens twee weken van wedstrijden is haar prestatie nog steeds niet op het niveau dat het moet zijn. Dan vraagt een vriend, die zelf ook fanatiek wielrenner is, of ze misschien een prestatiebevorderend middel wil proberen. Hij kan dat wel voor haar regelen. Lynn is wanhopig en wil in het sponsor programma blijven. Ze begint erover na te denken...

Wat denk je dat Lynn gaat doen?

Optie A:
Lynn gebruikt geen doping

Optie B:
Lynn gebruikt wel doping

Geef hieronder jouw keuze aan.

○ Optie A ○ Optie B

Waarom denk je dit?

Zet hieronder het aantal punten in bij je keuze: hoe zekerder je van je keuze bent, hoe meer punten je in kunt zetten.
Bijvoorbeeld: Twijfel je heel erg? Zet dan 1 punt in (1 ster).
Ben je vrij zeker van je keuze? Zet dan meer punten (bijv. 4 sterren).
Weet je het heel zeker? Zet dan alle punten in (7 sterren).
Je kunt net zoveel sterren inzetten als je zelfs wilt.

Heb je het goed, dan krijg je het aantal punten dat je in hebt gezet.
Heb je het fout, dan worden het aantal punten dat je in hebt gezet van je score af getrokken.

Hoeveel punten wil je inzetten op jouw keuze? 1 ster = 1 punt

★★★★★☆☆

Wat zou jij doen?

Optie A:
Geen doping gebruiken

Optie B:
Wel doping gebruiken

Geef hieronder jouw keuze aan.

○ Optie A ○ Optie B

Kun je uitleggen waarom?

Optie A: Geen doping gebruikt

Na er kort over nagedacht te hebben is Lynn er uit. Natuurlijk gaat ze niets gebruiken! Hoe kan hij eigenlijk zoiets voorstellen? Ze besluit om samen met haar coach te analyseren waar ze tekort schiet en er andere begeleiders bij te betrekken. Ze gaat onder andere op hoogtetraining om het zuurstofgehalte in haar bloed op een natuurlijke manier te verhogen en daarmee haar prestatie te verbeteren. Daarnaast neemt ze tussendoor meer rust om goed te herstellen van de intensieve trainingen. Ze voelt zich steeds sterker worden. Het gat tussen Lynn en haar tegenstanders wordt steeds kleiner. Het lijkt erop dat ze toch in het sponsorprogramma mag blijven. Ze is trots op zichzelf én op haar eigen prestaties.

Wat zijn de positieve gevolgen van deze keuze?

Wat zijn de negatieve gevolgen van deze keuze?

Vorige | Volgende

Gevolgen Optie B: Wel doping gebruikt

De eerste reactie van Lynn was: “Nee, natuurlijk niet!”. Maar daarna begon ze te twijfelen. Zoveel kwaad kon het toch niet? Haar vriend is er toch ook positief over? Het zou ervoor kunnen zorgen dat ze wel in het sponsorprogramma kan blijven. Ze besluit haar vriend te vragen om het middel voor haar te halen. De eerste paar dagen nadat ze het heeft ingenomen voelt ze zich goed. Ze merkt dat ze het langer uithoudt en minder vermoeid raakt. Na een week wordt ze ziek. Haar hartslag is erg hoog en gaat niet meer omlaag. Ze gaat zweten en haar spieren doen erg pijn. Ze durft niet naar de sportarts: stel dat hij doorvraagt over wat ze ingenomen heeft? Ondanks dat ze het middel niet meer gebruikt wordt ze steeds zieker en moet ze zelfs de training meerdere dagen overslaan. Hierdoor wordt het gat tussen Lynn en haar tegenstanders alleen maar groter. Het lijkt erop dat ze alsnog uit het sponsorprogramma wordt gezet.

Wat zijn de negatieve gevolgen van deze keuze?

Wat zijn de positieve gevolgen van deze keuze?

Vorige | Volgende

Lynn kon dus kiezen om wel of geen doping te gebruiken.

Hierna worden de **gevolgen** van allebei de keuzes aangegeven.
Lees ze goed door en beantwoord de vragen.

Vorige | Volgende

Je hebt nu gezien wat de uitkomsten van beide keuzes zijn.

Wat denk je nu dat Lynn heeft gedaan?

Optie A: Geen doping gebruikt

Na er kort over nagedacht te hebben is Lynn er uit. Natuurlijk gaat ze niets gebruiken! Hoe kan hij eigenlijk zoiets voorstellen? Ze besluit om samen met haar coach te analyseren waar ze tekort schiet en er andere begeleiders bij te betrekken. Ze gaat onder andere op hoogtetraining om het zuurstofgehalte in haar bloed op een natuurlijke manier te verhogen en daarmee haar prestatie te verbeteren. Daarnaast neemt ze tussendoor meer rust om goed te herstellen van de intensieve trainingen. Ze voelt zich steeds sterker worden. Het gat tussen Lynn en haar tegenstanders wordt steeds kleiner. Het lijkt erop dat ze toch in het sponsorprogramma mag blijven. Ze is trots op zichzelf én op haar eigen prestaties.

Gevolgen Optie B: Wel doping gebruikt

De eerste reactie van Lynn was: "Nee, natuurlijk niet!". Maar daarna begon ze te twijfelen. Zoveel kwaad kon het toch niet? Haar vriend is er toch ook positief over? Het zou ervoor kunnen zorgen dat ze wel in het sponsorprogramma kan blijven. Ze besluit haar vriend te vragen om het middel voor haar te halen. De eerste paar dagen nadat ze het heeft ingenomen voelt ze zich goed. Ze merkt dat ze het langer uithoudt en minder vermoeid raakt. Na een week wordt ze ziek. Haar hartslag is erg hoog en gaat niet meer omlaag. Ze gaat zweten en haar spieren doen erg pijn. Ze durft niet naar de sportarts: stel dat hij doorvraagt over wat ze ingenomen heeft? Ondanks dat ze het middel niet meer gebruikt wordt ze steeds zieker en moet ze zelfs de training meerdere dagen overslaan. Hierdoor wordt het gat tussen Lynn en haar tegenstanders alleen maar groter. Het lijkt erop dat ze alsnog uit het sponsorprogramma wordt gezet.

Geef hieronder je keuze aan.

◉ Optie A ○ Optie B

Waarom denk je dit?

Hoeveel punten wil je inzetten op jouw keuze? 1 ster = 1 punt

★★★★★★☆

Wat zou *jij* hebben gedaan?

Geef hieronder je keuze aan.

○ Optie A ○ Optie B

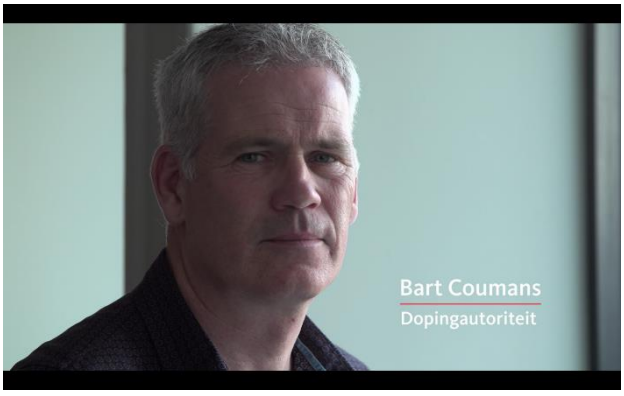
Lynn heeft geen doping gebruikt.

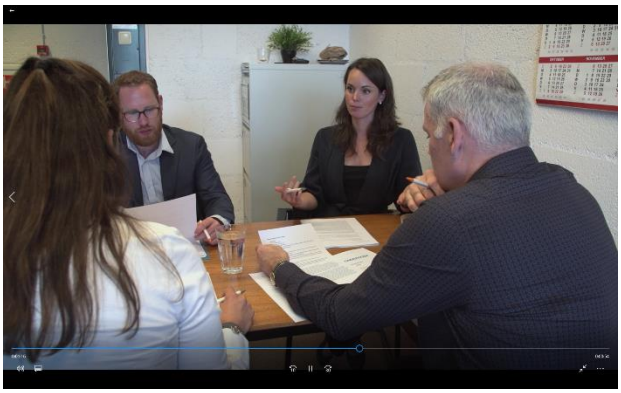
Dit heeft je 1 punten opgeleverd.

Volgende

Appendix 4. Promotion video for the recruitment

To invite an inform the target group of adolescent athletes, we had a short promotion video professionally made, that included an athlete, the head of prevention of the Anti-Doping Authority, and the research team. Below several video stills (in Dutch) are presented.





Appendix 5. Use of the results

Publications

The results will be published in scientific journals and in reports for the schools that participated in the research.

As for the scientific publications, we aim to publish three manuscripts based on the data that was gathered in the current study:

1. Claessens, B. J. C. & van Noorden, T. H. J. Effectivity of an online doping intervention study among adolescent elite athletes
2. van Noorden, T. H. J. & Claessens, B. J. C. Protocol of an online doping intervention study among adolescent elite athletes.
3. van Noorden, T. H. J. & Claessens, B. J. C. Using the Theory of Planned Behaviour and Social-Cognitive Theory to explain doping intentions in adolescent elite athletes: Contrasting or complementary models?

Furthermore, we are planning future research on the study topic with a focus on the social entourage of (elite) athletes (coaches, trainers, parents, and peers) and preparing a grant application for the WADA Social Sciences Grant in July 2018.

Presentations

The results will be presented to the young talented athletes at the 'Talent Experience Day' on June 29, 2018. This day is organised together with the Anti-Doping Authority the Netherlands. All athletes that completed the entire program (control group: pre- and post-measure questionnaires; experimental group: pre- and post- measure questionnaires and all four sessions) are invited for this day. Also, the coordinator of each participating elite sport school is invited to join the athletes at the Talent Experience Day.

Thank you so much for your willingness to participate in research of the Radboud Universiteit and the Dopingautoriteit!

Therefore we personally invite you for the:

Talent Experience Day

Friday June 29 2018, 10.00 - 15.00 h.
@ Papendal – training location Vitesse

9:30 **Welcome**

10:00 **Opening by the famous sport voice of the Netherlands and an Olympic athlete!!!**

11:00 **Workshops (4x 45 minutes)**

- ***Training:*** **experience the Soccer Lab of Vitesse**
- ***Nutrition*****: Lunch and receive tips of the chef of Vitesse**
- ***Mental*****: a renowned sport psychologist trains your brain**
- ***DuMo-rale:*** **An international cycling team inspires**

14:00 **Pause**

14:15 **Launce of the Be PROUD program together with the Atlete Committee of NOC*NSF**

15:00 **End of the talent Experience Day**

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Around one hundred athletes and school coordinators signed up for the day. During this day, the athletes will also follow four different workshops aimed at enhancing their performance via ‘fair play’ methods such as nutrition and mental training.
We will also organise a separate presentation for all coordinators of the elite sport schools in the Netherlands.

The results will be presented at the BASES Conference in November 2018 in the UK, where many researchers in the same area of research will be present.

In the next national conference of the Anti-Doping Authority the Netherlands, we will present our results to sports federations, regional, and national sport organisations.

Past presentations:

- Anti-Doping Authority the Netherlands conference ‘Samen tegen Doping’ Presentation: Ethical decision making (October 11, 2016).
- Newsletter Radboud University (November 14, 2016)
- National radio interview (NPO 1/NOS, December 16, 2016)
- A NOC*NSF research meeting, to promote our research and recruit respondents (February 2, 2017)
- Stichting LOOT scholen (secondary schools for talented and elite athletes); presentation of our research to recruit respondents (May 12, 2017)
- Knowledge Center sport; presentation of our research for anti-doping researchers and practitioners in the Netherlands (September 26, 2017).

Educational program

The materials that were developed and used in this study, will be integrated in the national educational program for talents in order to prepare them for a future elite athlete career of the Netherland Olympic Committee*Netherlands Sports Confederation (NOC*NSF) and the Anti-Doping Authority the Netherlands. In 2014, they started the gold, silver, bronze program to educate athletes in different phases of their career.
We have no intention to commercialize our educational program. We do aim to develop an extension of the current educational program and to incorporate the, to be investigated, impact of the social entourage.