Taking Strides Toward Prevention-Based Deterrence: USATF Coaches Perceptions of PED Use and Drug Testing

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Abstract

As national anti-doping organizations (NADOs) adopt preventative measures to complement detection-based deterrence methods, understanding coaches’ attitudes toward drugs in sport will take on a new importance. This study was conducted to measure coaches’ attitudes in the sport of track and field toward performance enhancing drug (PED) use and drug testing. A total of 254 track and field coaches (Age: 33.4 yrs ±9.7) completed a 51-item survey. Coaches who were certified reported they felt more knowledgeable about PED use ($r_s = .168, p = .004$) and that they had learned about PED use and testing through the USA Track and Field (USATF) coaches education program ($r_s = .220, p < .001$). USATF certified coaches also reported a stronger perception that the coach plays a key role in PED deterrence ($r_s = .158, p = .006$). These findings suggest that national sport governing bodies (NGBs) like USATF have taken significant steps to educate prospective coaches on the topic of PED’s and drug testing and these measures have positively impacted coaches.

Key words: Competition, Doping, Fair Play, Performance Enhancing Drugs, Anabolic Steroids
Introduction

Over the past few decades, significant advances in training methods and sporting equipment have pushed the limits of human performance beyond previously unattainable barriers, increasing the demand for athletes to equal or surpass these new competitive standards (Buist & East, 2004). The standards by which elite track and field athletes are measured are so high that only a select few ever attain them and thus many elite athletes go uncompensated both monetarily and socially for their tremendous efforts. The public, the media, the athlete’s inner circle, as well as those companies and individuals with vested financial interests exert enormous pressure to win. As the use of supplements in athletics increases, the distinction has become increasingly blurred between acceptable uses and unfair advantages derived from performance enhancing supplements (Mottram, 1999). Blinded by the desire to win, athletes sometimes resort to banned performance enhancing drugs (PEDs) to achieve their goals.

Athletes cited teammates/peers and coaches as the most important sculptors of attitudes toward the use of PEDs. This finding is in alignment with the idea of “significant others” as presented by Coakley (2007). “Significant others” can influence athletes’ behavior regardless of their personal disapproval of PED use. For example, coaches are viewed as having a strong influence in regulating athletes’ attitudes and behavior (Anshel, 1991; Orlick, 1990). Gould, Diffenbach, and Moffett (2002) suggested that coaches play crucial roles in developing achievement goals for athletes and mentoring athletes’ development while also having the potential to indirectly model the positive skills and characteristics athletes need for success. Coaches could be one of the more important agents in preventing drug use among athletes (Dubin, 1990; Fung, 2003). Laure, Thouvenin, and Lecerf (2001) found that 98.1% of surveyed track and field coaches in France believed they have a role in preventing doping.

Numerous studies have reported that an athlete’s performance enhancing drug use in sport could be credited to a complex interaction of personal and environmental factors (Dodge & Jaccard, 2007; Nicholson & Agnew, 1989; Tricker, Cook, & McGuire, 1989). Possible contributing environmental factors include attitudes of peer group, parents, coaches, accessibility to drugs, and cultural norms and values (Polich, Ellichson, Reuter, & Kahan, 1984; Tricker & Connolly, 1997). In a 1991 study by Anshel, interviews were conducted with elite athletes to try to understand the possible reason or reasons why they might choose to use a PED. Anshel reported three categories of reasoning: (1) physical, (2) psychological/emotional and (3) social. The physical reasons identified by athletes were pain reduction, rehabilitation from injury, heightened energy/arousal, relaxation/lower arousal, and weight reduction. The psychological/emotional reasons they cited included a fear of failure and combating low self-confidence. Finally, the social reasons included modeling after sport heroes and gaining support among their peers (Anshel, 1991; Oriard, 1982).

Fuller and LaFountain (1996) conducted an investigation into the motivation and justification of athletes who admitted to steroid use. Fifty athletes ages 15 to 40 years old participating in weight lifting, football, wrestling, and bodybuilding revealed how they rationalized the use of performance-enhancing drugs, breaking the law,
and exposing their bodies to health risks. Athletes' self-reported reasons for taking PEDs included fears that competitors have a chemically or medically enhanced, unfair advantage.

A later study by Strelan and Boeckmann (2003) expounded on this data by further delineating deterrents (costs) and benefits (enhanced performance) to PED use by athletes. They postulate that use of the theory of criminal decision making (deterrence theory) is as applicable in doping situations as it is to understanding why people disobey the law. Athletes, akin to criminals, are likely to use a cost-benefit analysis. Through their research, they developed the Drugs in Sport Deterrence Model (DSDM), and presented it as a platform for a more systematic understanding of what influences the decisions of elite athletes in deciding whether or not to use PEDs.

**Why is Attitude Measurement Important to Drugs in Sport?**

The current anti-doping policy has received much criticism for its elite athlete focus, sanction-based approach and associated costs (Savulescu, Foddy, & Clayton, 2004). The alternative is to deter use by stopping it before it starts by primary prevention; referred to by Mazanov, (2006) as prevention-based deterrence. The World Anti-Doping Agency (WADA) has invested over $7 million in research to develop gene-doping screening tests (WADA, 2008), but also supports an extensive education and outreach program to warn athletes and their coaches about the risks of using fledgling genetic technologies without medical supervision. Attitudes therefore become one mechanism toward explaining drug use behavior in sport. That is, it is the relationship between attitude and behavior that makes attitudes attractive to drug use in sport research (Mazanov, 2006). Goldberg et al. (1996) demonstrated the effectiveness of prevention based deterrence with a peer-taught, team-based approach that was an effective avenue to improve adolescent behavior and reduce drug use risk factors.

Detection-based deterrence, where the risk of a positive test is meant to deter use (secondary prevention), is difficult and costly due to the diversity of molecular structure testosterone-related drugs. The process is rapidly becoming obsolete with the danger of undetectable gene-doping (Mazanov, 2006; Miah, 2004). The primary rationale why attitude measurement is important to understanding drug use in sport is that attitudes become a surrogate for otherwise unobservable behavior (Judge, Gilreath, & Bellar, 2010; McGuire, 1985). Gene doping adds new genes or manipulates an athlete's own genes that control muscle growth and development of strength, for example. New genes could be added to cells and tissues using a targeted virus or other delivery method but researchers are also preparing for the possibility that an athlete's own genes could be modified by treatment with genetic elements or even drugs (Miah, 2004). Another substance that may already be escaping the drug testing policy is Human Growth Hormone (HGH); this substance is especially problematic because it is currently being used by athletes while gene doping is still just a looming trend. HGH detection is unreliable because of its natural occurrence in the body (Unal & Unal, 2004).
The Importance of Measuring the Attitudes of Track and Field Coaches

Even though athletes are exposed to many powerful media messages (TV, movies, and music, for example), parents, caregivers, coaches, and other adults still have great influence. But, coaches are the common denominators in athletes’ lives, the people who are there from their first forays into sport until the attainment of the highest summits. Quality coaches have the proper educational background, experience and training in order to effectively deliver their services. The fact that coaches can readily be trained to provide a positive environment for athletes (Smith & Smoll, 2003) suggests that coach training can be an important vehicle for improving the benefits of sport participation for athletes. Whatever their level of involvement, coaches can use their considerable influence to make major contributions to the use or prevention of PED use.

The sport of track and field has had more than its fair share of doping offenses since Olympic testing programs started during the 1960’s (USATF, n.d.). For track and field coaches to function optimally as role models and in assisting aspiring young athletes to formulate correct attitudes against doping, they must also possess accurate knowledge and appropriate attitudes on doping and PED use. Although coaches can gain information about PED use and PED abuse through various channels, seminars and information packages are typically the delivery format favored by coaches (Fung, 2003). For the sport of track and field the United States, the national governing body USA Track and Field (USATF), the United States Anti-Doping Agency (USADA), and the United States Olympic Committee (USOC) are the major stakeholders to provide such information to community coaches. In order for these agencies to develop appropriately sequenced knowledge, some understanding of the current status of coaches’ knowledge and attitudes on PED use and PED abuse is necessary.

Currently, there is a dearth of social science research on the issues of drugs in sport (Mazanov, 2006). Many gaps in the literature still exist; little data concerning the attitudes of specific groups of coaches on the topic of PED use and testing is presently available (Diacin et al. 2003). A better understanding of how specific sport groups think in terms of doping, especially in a sport with such high doping violation presence is important. Coaching education and certification programs encourage a higher level of competence among practitioners. Even with the proliferation of coaches’ education and certification programs, and a greater emphasis on research in this area it is uncertain if certification is actually impacting coaches. The purpose of the present study is to examine the perceived knowledge, attitudes, subjective norms, and behavioral intent of track and field coaches in the United States on PED use and drug testing.

Method
Participants

Participants were 254 track and field coaches from the United States representing the sport at all levels from high school to the professional/elite level (Table 1). The subjects ranged in age from 20 to 65 year of age (mean age = 33.4 yrs ±9.7). The sample was comprised of 75.9% males and 24.1% females from high school to professional/elite level.
professional coaches. The ethnic breakdown of subjects was as follows: the 15.0% of the participants were African American (n = 38), 75.5% were Caucasian (n = 188), 4.8% were Hispanic (n = 12) and less than 0.4% (n = 1) were Asian/Pacific American. The 254 coaches reported the following breakdown of coaching responsibilities: Youth 8.3%, HS 41.1%, College 44.3%, post Collegiate/Masters 4.0%. There was a high degree of uniformity (i.e., no difference) in the attitudes of the participants toward doping, thus for the present investigation results will be reported for the total sample. Institutional Review Board (IRB) approval was obtained prior to data collection to safeguard the rights of the study participants.

**Table 1: Participant Characteristics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ±SD</th>
<th>Count</th>
<th>Percentage</th>
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<td>n=192</td>
<td>75.90%</td>
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<tr>
<td>Ethnicity</td>
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<td>0.40%</td>
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<tr>
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<tr>
<td>Caucasian</td>
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<td>n=188</td>
<td>74.30%</td>
</tr>
<tr>
<td>other</td>
<td></td>
<td>n=10</td>
<td>4.00%</td>
</tr>
</tbody>
</table>

Table 1: Participant characteristics listed as means plus or minus standard deviation, or count and percentage.

**Instrument**

A survey of 51 questions was formulated to assess favorable attitudes, unfavorable attitudes, unfavorable subject norm, favorable intent behavior, unfavorable intent behavior, and drug testing attitudes. In developing this study and in constructing the questionnaire for data collection, the Theory of Planned Behavior (Ajzen &
Fishbein, 1988; Fung, 2003) was used as a guiding framework. Preliminary demographical information was assessed through five questions representing the first section of the survey labeled “default section.” The questionnaire was designed to gather basic as well as specific information. A peer researcher who had experience in this exact line of inquiry first reviewed the instrument. Subsequently, the survey was reviewed for clarity and content validity by a four-member panel of experts and practitioners. The instrument was then piloted on a group of 20 track and field club coaches and demonstrated good construct validity (Chronbach's Alpha > .750). These research questions have also been previously used on a group of track and field athletes and demonstrated good construct validity. A post-hoc principal component factor analysis performed on the results of the present investigation revealed high construct validity within grouped questions. Responses to all questions, excluding preliminary demographical information, were achieved through a 5-point likert scale (strongly disagree, disagree, no comment, agree, and strongly agree).

Procedure

An email explaining the study was sent to 331 male and female coaches participating in the 2009 USATF coach’s education school in Boulder, Colorado. The email explained to coaches the purpose of the study and the general content of the survey. Questionnaires were then distributed to participants at check-in and anonymous and informed consent was implied upon submission. Coaches were able to return the survey at any time during the week.

Data Analysis

Data were collected for the duration of one week, upon the conclusion of which 254 surveys were completed in full. Incomplete surveys were filtered out. Means and standard deviations of the key constructs were calculated. Relationships between variables of interest were calculated using non-parametric bivariate correlations. The level of significance for all statistical analyses was set a priori at alpha < .05. All statistical analysis was performed with a statistical software package (SPSS version 17.0 for Macintosh).

Results

The coaches in the present study were in agreement that PED use is a problem in the realm of international sports (74.3% Agree or Strongly Agree), though they reported a lesser perception that American and World records were tied to PED use (7.1% and 9.1% Agree or Strongly Agree respectively). Participants also reported that education (58.5% Agree or Strongly Agree) and coaches (88.8% Agree or Strongly Agree) are key factors in deterrence from PED use. Coaches who were certified reported that they felt more knowledgeable about PED use ($r_s = .168, p = .004$) and that they had learned about PED use and testing through the USATF coaches education program ($r_s = .220, p < .001$). USATF certified coaches also reported a stronger perception that the coach plays a key role in PED deterrence ($r_s = .158, p = .006$). Coaches with USATF certifications also reported spending time discussing and discouraging PED use with athletes ($r_s = .121, p = .027$; USATF Certified 64.7% Agree or Strongly Agree, Uncertified 48.9% Agree or Strongly Agree). USATF certified coaches also reported
that more time in the coaching education curriculum needed to be spent addressing the topic of PED and drug testing (62.1% Agree or Strongly Agree). Coaches who spent more hours coaching reported that higher scores with a tendency to agree that a lifetime ban for a second doping violation was too harsh ($r_s = .172, p = .172$). More coaching hours was also associated with greater disagreement with legal supplements such as creatine use, considered cheating ($r_s = -.135, p = .034$). Level of athlete coached was positively related to feelings that an athlete had been cheated out of a higher placement during competition by another competitor using a banned substance ($r_s = .174, p = .006$). Reported responses to the question regarding the use of PED if there was knowledge that one would not get caught was also positively related to level of athlete coached. Finally, level of athlete coached was associated with greater disagreement with legal supplements such as creatine use, considered cheating ($r_s = -.188, p = .003$).

**Figure 1: PED responses by USATF certification**

![Figure 1: PED responses by USATF certification](image-url)
Figure 2: PED responses by Coaching Hours

Error bars: 95% CI

A lifetime ban for a second doping violation is too harsh
The use of legal supplements like creatine should be considered cheating
Discussion

The threat of new “undetectable” performance enhancers, which are entering the market daily, underlines the importance of research directed at understanding the perceptions of coaches. But, research involving self-reported questionnaires and limited comparable data create difficulty in assessing result reliability (Alaranta et al. 2006). The coaches in the present study were in agreement that PED use is a problem in the realm of international sports, though they reported a lesser perception that American and World records were tied to PED use. Some experts suppose that attitudes reported in investigations done in the area of PED use in sport may be the consequence of social desirability (Petroczi, 2007; Petroczi & Nepusz, 2006). That is, the coaches could be reporting what they think NADOs want to hear rather than their true attitude toward drugs in sport issues. This may explain the sharp contrast between the subjects reported view of PED use being a problem in international sports yet having reported a much lesser perception of American and World records being tied to doping.

Figure 3: PED responses by Level of Athlete Currently Coaching

The use of legal supplements like creatine should be considered cheating. If I knew I would not get caught I would use a banned performance enhancing drug. I feel my athlete has been cheated out of a higher placement in their event because another competitor was using a banned substance.

Error bars: 95% CI
Survey research investigating a prohibited practice has limitations: answers may be intentionally false as the subjects questioned may not wish to reveal their true feelings, even if anonymity and confidentiality are guaranteed by the investigators. Thus, these results should be interpreted with caution.

The results of the present study are in partial agreement with the Theory of Planned Behavior (Ajzen & Fishbein, 1988), namely that the level of intentions to perform a particular behavior depends on the individual’s attitude toward the behavior (Ajzen, 1991). This theory has been successfully used to predict intentions to the use of PEDs among collegiate athletes and throwers in two similar studies (Allemeier, 1996; Judge, Bellar, Craig & Gilreath, 2010). However, the relationship between subjective norm and behavioral intent was not significant in the present study. A plausible reason for the discrepancy is that 85.4% of the participants were either high school or collegiate coaches who may not perceive themselves as having any significant influence or involvement with the doping problem more commonly found in, and associated with, elite level athletes. The three survey items utilized to gather data on the subjective norms in our study were focused toward drug use among elite level athletes and failed to capture the subject’s opinions on drug use issues in their present level of coaching. These questions should be refined for future research.

**PED Responses by USATF Certification**

Certainly, education is one of the main ways coaches can improve their ability to provide not only information but a heightened athletic experience to athletes (Johnson, Haskvitz, & Brehm, 2009). Coaches who were USATF certified reported that they felt more knowledgeable about PED use and had learned about PED use and testing through the USATF coaches’ education program. DeRenne and House (1993) addressed the importance of education as well as information, writing that knowledge is the sum of information plus experience, and noting that, “With knowledge comes awareness.” Coaches could be one of the more important driving forces in preventing drug use among athletes (Dubin, 1990; Fung, 2003). USATF certified coaches reported a stronger perception of the coach playing a key role in PED deterrence. Laure, Thouvenin, and Lecerf (2001) found that 98.1% of surveyed track and field coaches in France believed they have a role in preventing doping. Coaches with USATF certifications also reported spending time discussing and discouraging PED use with athletes: (USATF Certified 64.7% Agree or Strongly Agree compared to Uncertified 48.9% Agree or Strongly Agree). Gould, Diffenbach, and Moffett (2002), suggested that coaches play crucial roles in developing achievement goals for athletes and mentoring athletes’ development, while also having the potential to indirectly model the positive skills and characteristics athletes need for success. The areas of health/well being, PEDs, and drug testing may have been emphasized enough in the USATF coach’s education program curriculum. Sixty two percent of USATF certified coaches also reported that more time in the coaching education curriculum needed to be spent addressing the topic of PED and drug testing. The USATF coach’s education program utilizes many of the NASPE standards as an educational cornerstone to provide an introduction to the skills and knowledge trained coaches should have, but the program is not currently National Council for the Accreditation of Coaching Education (NCACE) accredited (Personal Communication with Terry Crawford, June, 17, 2010).
PED Responses by Coaching Hours per Week

Nutritional supplements are also quite popular in the sport of track and field. Even though their use is not prohibited in sport, they still pose a number of ethical and health questions for sporting officials. In a recent study by Judge, Bellar, Craig, and Gilreath (2010), the majority of participants (70.5%) in that study identified strength as the most important factor for success in the track and field throwing events (Franke, & Berendonk, 1997) and (84.1%) admitted to using creatine (a legal substance). The athletes in the Judge et al. (2010) study supported the anti-doping movement, but were also supportive of using legal ergogenic aids. Interestingly, using nutritional supplements have been found to increase the likelihood of subsequent doping (Laure & Binsinger, 2007). USATF coaches in the present study did not favor the use of creatine or other legal supplements. In fact coaches who reported the most hours per day coaching also reported higher levels of disagreement that legal supplements such as creatine should be considered cheating. This reflects positively on the moral character of the participants in the present study. If coaches adopt a permissive attitude toward nutritional supplement use in athletes it might encourage a more lenient attitude toward the use of more dangerous PEDs (Metz, Small, Levine, & Gershel, 2001).

In this section, participants showed strong moral character in their unwillingness to use PEDs regardless of the situational variables. But, in contrast, coaches who spent more hours coaching reported that higher scores with a tendency to agree that a lifetime ban for a second doping violation was too harsh. This conclusion could be a result of several factors (Dixon, 2008). Participants in the present study could: (1) consider PED and/or supplement use unnecessary because they are happy with their athletes level of performance, regardless of who close to them might use or condone, their use; (2) they could have all been optimists/inner-directeds (Donovan et al., 2002); (3) or perhaps they were not completely honest (Petroczi, 2007; Petroczi & Nepusz, 2006). Further investigation is needed to uncover the source of these perceptions.

PED Responses by Level of Athlete Currently Coaching

The level of athlete coached was positively related to feelings that an athlete had been cheated out of a higher placement during competition by another competitor using a banned substance. This response is mirrored by reported PED usage patterns of athletes of different ages/levels. Studies concerning children and adolescents report a doping prevalence between 3 and 5% (Laure, 1997). Wroble, Gray, and Rodrigo, (2002), conducted a survey of 1,553 pre-adolescent (10 to 14 year-old) athletes from 34 states and found a much lower anabolic steroid (AS) usage percentage among 10-14 year olds (0.9% male) and (0.2% female). In an investigation by Stigler and Yesalis, (1999), that surveyed 873 Indiana high school football players, 6.3% admitted to using anabolic steroids (AS). Among adult athletes, in self-reported-use studies, doping prevalence has been estimated to be 5–15% (Laure, 1997). However, projected-use studies, where subjects have been asked about the practice of other athletes, report a mean prevalence of 15–25% (Laure, 1997; Yesalis, Buckley, & Anderson, 1990). While estimates of actual PED usage vary, it appears to be an intensifying concern in athletics from the high-school level and beyond (Gough, 1989; Stigler & Yesalis, 1999).
The section for “unfavorable intent behavior” measured the overall likelihood that a coach would recommend an athlete use a banned substance and the likelihood they would recommend PED use under the influence of various situational variables that might affect their decisions such as if their teammates used drugs, they perceived their competition was using drugs, or in the absence of threats against use (no testing program/no sanctions for use). In this section, an overwhelming majority of participants showed strong moral character in their unwillingness to recommend PED use to their athletes regardless of the situational variables. Reported responses to the question regarding the use of a PED if there was knowledge that one would not get caught was negative but also positively related to level of athlete coached. This is again in line with reported usage patterns of athletes from youth through elite level (Laure, 1997; Yesalis, Buckley, & Anderson, 1990).

Creatine is a nutritional supplement that falls under the broad category of products known as ergogenic aids, substances designed to chemically improve athletic performance. In a recent study by Metz, Small, Levine, and Gershel, 2001, the overall prevalence of athletes taking creatine at the high school level was 5.6% (62/1103 subjects). When the data was broken down by grades, user rates were similar in the 6th through 10th grades (ranging from 2.9% to 4.6%). In the 11th and 12th grades the reported user rate increased significantly to 44% (Metz, Small, Levine, & Gershel, 2001). A similar high number of collegiate athletes (28%) reported taking creatine in a related study investigating usage patterns at the collegiate level (LaBotz & Smith, 1999). The efficacy and potential health effects of ergogenic aids have been a recent topic of discussion by the National Collegiate Athletic Association (NCAA). The NCAA has made strides within its legislation to protect the health of intercollegiate athletes: drug tests condemn the misuse of harmful legal and illegal substance abuse, member institutions are restricted from providing supplements like creatine, and educational program implementation gives both athletes and coaches the knowledge to prevent health-related problems (NCAA, 2009). Participants in the present study felt that the use of legal supplements like creatine should be considered cheating. Further, the level of athlete coached was associated with greater disagreement with legal supplements such as creatine use, considered cheating. An NCAA ruling in 2001 that restricted member institutions from providing athletes with supplements such as creatine and protein (NCAA, 2009) is a possible explanation why coaches of higher level coaches’ disagreement with supplement use. The general disagreement of supplement use by participants in the present study may also be because of unknown health risks (Metz, Small, Levine, & Gershel, 2001). The safety of creatine usage in people less than 18 years old has been questioned and use is not generally advised in this age group, because there are very limited data documenting the safety of creatine in children or adolescents (Metzl, 1999). USATF coaches appear to be communicating a consistent message of disapproval toward all performance-enhancing substances.

**Recommendations**

Whatever level of involvement, U.S. track and field coaches should use their considerable influence to make major contributions in preventing PED use. It is important that coaches continue their efforts to encourage fair play; the very foundations of sport are at stake. These ideals need to be reinforced through the system of coaching education that is available to these coaches, as the trend in this study suggests that knowledge about
PED’s is garnered through this system of coaching education. Although the primary ideals of sport (education, ethics, health, respect, socialization) remain unchanged for the general public, the unlevel playing field athletes are faced with sometimes causes them to revisit these core values (Buist & East, 2004). Athletes’ foundational beliefs are occasionally distorted by new situations or extraordinary circumstances over which they seem to have no control. Thusly, in a system that promotes winning at all cost, doping sometimes seems warranted and unavoidable. It is clear that better testing methods and programs must be developed for athletes to have complete confidence their playing field is level, but controlling doping only by tests is not sufficient. Resisting doping requires the concerted effort by coaches and others who guide the athlete’s development and value sportsmanship.

Track and field coaches must continue to take a negative view of PED’s and share that outlook with their athletes. By being knowledgeable, coaches can provide valuable information concerning PEDs and elucidate to athletes why they are in opposition to them and support an intolerance of them. By building a healthy environment based on fair play, providing strong training conditions that respect individual capabilities, and setting realistic goals, coaches can battle the “win at all cost” attitude that leads to PED use (Buist & East, 2004). Through their ties to other professionals (coach educators, nutritionists, sport scientists, strength coaches, athletic trainers, etc.), track and field coaches will be able to keep their athletes informed while having access to a network of useful contacts as needed. It is through education and research that we mitigate the abuse of PEDs by athletes (Hoffman et al. 2009). To completely eliminate doping from sport, a profound change in attitudes is needed, which have to be monitored frequently. This investigation hopes to act as a springboard for future research that will further the understanding of how coaches can serve as the forefront of the battle to combat PED use in athletics, and what role coaching education programs can play to reinforce the values those coaches adhere to.
References


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