



Doping in elite sport – do the fans care?

Public opinion on the consequences of doping scandals

Keywords

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Harry Arne Solberg

Sør-Trøndelag University College
Trondheim, Norway
harry.solberg@hist.no

Dag Vidar Hanstad

Norwegian School of Sport Sciences
Oslo, Norway
dag.vidar.hanstad@nih.no

Thor Atle Thøring

Sør-Trøndelag University College
Trondheim, Norway
thor.thoring@hist.no

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Abstract

There are indications that commercial stakeholders are reluctant to associate with sports involved in doping scandals. A survey of 925 Norwegian sports consumers supports this reluctance, showing no tolerance for pure doping substances. The majority were in favour of tough responses to athletes and sports involved in doping. Older respondents were more negative towards doping. Those who were strongly interested in sport were more willing than others to accept doping.

Executive summary

For decades, athletes' use of doping seemed to have no influence on the willingness of commercial actors (i.e. sponsors and TV broadcasters) to be involved in sport. During the past few years, for some sports this pattern has changed. In cycling, for example, several sponsors have withdrawn their support due to the many doping scandals. Similar reactions have been identified among TV broadcasters. In 2008, ARD and

ZDF, the two German public service broadcasters, decided to pull out of the Tour de France because of the many doping incidents. Such reactions from sponsors and TV stations have had serious consequences, among them, the cancellation of the 2009 Tour de Germany.

Sponsors and TV broadcasters represent the *derived demand* for sport. These stakeholders commit



resources to sport because of *direct demand*, i.e. from the general public. Therefore, the views and attitudes of sports spectators towards doping is of great importance in determining in which sports sponsors and TV broadcasters will become involved.

A survey (N=925) conducted in Norway investigated opinions and attitudes towards doping. It revealed no tolerance of pure doping substances, such as EPO, amphetamines and anabolic steroids. The results were mixed with regard to so-called 'supplements' and methods that can be categorised as belonging to a 'grey zone', including high-altitude chambers.

An overwhelming majority of respondents supported tough reactions from sponsors towards the athletes/teams involved in doping scandals, for example a reduction in sponsor support. The same applied to the idea that athletes caught doping should pay back financial support to their sponsors. A large proportion agreed that commercial actors who continued their involvements in sports associated with doping were accomplices in doping.

Regression analyses revealed that the older the respondent, the more negative they were towards doping. A similar pattern applied to those who highly emphasised the uncertainty of outcome and the calculative motive. Contrary to this, people who were very interested in sport expressed more liberal attitudes. They disagreed with the idea of punishing the athletes, and did not blame the commercial actors who continued being involved in doping-associated sports. The regression analyses did not uncover specific differences in attitudes towards doping among those who strongly identified themselves with teams/athletes and others.

However, the regression models displayed low values on obtained R-squares, which is an indication of a low model fit. Due to significant differences between genders, the regression analyses presented in this paper only cover men. The general model, including both genders, displayed significantly lower explanatory power than the 'pure male model'. Hence, it is correct to say that the regression analyses

provided some explanation of men's attitudes towards doping in elite sport, but not those of women. This indicates that future research should consider alternative theoretical and empirical perspectives to better analyse what influences women's attitudes towards doping in elite sport.

Introduction

Elite athletes have used performance-enhancing stimulants since the ancient games (Finley & Pleket, 1976; Donohoe & Johnson, 1986), but it was not until the middle of the 20th century that doping was treated as a problem. One reason for this was that new substances such as anabolic steroids and amphetamine led to several deaths during sports performances (Houlihan, 2002). Doping controls were introduced in main events, such as the 1966 World Cup soccer finals and the 1968 Olympic Games (Dimeo, 2007). However, during the following decades, doping became widespread. This development ran parallel to other processes in elite sport, such as professionalisation, politicisation and commercialisation (Waddington & Smith, 2009). The fact that athletes used drugs did not have any negative effect on the commercialisation of elite sport. In recent years, however, the picture seems to have changed.

This paper investigates attitudes and opinions of sports consumers around doping. It raises questions such as:

- Which substances and instruments do people accept that elite sports athletes use to improve their performances?
- What opinions do they have about the use of doping by elite sports athletes?
- What is their view and attitude towards commercial actors such as TV broadcasters and sponsors involved in 'doping sports'?
- What do they regard as appropriate actions by themselves and from commercial actors towards athletes involved in doping?



Commercial stakeholders such as TV broadcasters and sponsors involve themselves in sport because of the demand from these groups. If doping scandals influence people's interest in sport, this can in turn affect how much time and money the commercial stakeholders are willing to spend on sport. This makes it interesting to analyse to what degree doping in elite sport actually affects people's interest in the sport.

People are attracted to sport for different reasons. Some identify strongly with specific teams. Some are fascinated by the uncertainty of outcome, a characteristic that makes sport different from other commodities. Others involve themselves in sport because of betting. This makes it interesting to investigate whether people with different motives react differently to doping scandals. Do some fans have more or less liberal attitudes towards doping?

The following section gives an overview of how commercial stakeholders have reacted towards doping scandals in sport over the years. The theoretical section discusses factors that have been documented to influence the demand for sport, and whether they are likely to affect peoples' motives for watching sport. The empirical section presents the results from a survey of 925 Norwegian respondents focusing on the issues mentioned above, followed by a discussion of the findings.

Historical development: the use of doping and reactions from sponsors

For many years doping incidents did not affect the relationship between sport and the commercial stakeholders involved in sport, such as sponsors and TV companies. Cycling can be used as an example. Investigations during the 1998 Tour de France revealed that doping was widespread, systematic and highly organised in professional cycling, later named the "Festina scandal" after the sponsor of the French cycling team (Vest Christiansen, 2005). The watch manufacturer Festina became caught in the middle of the scandal after the team's masseur was arrested by

French police, who found 250 batches of anabolic steroids and 400 ampoules of EPO in his car (Voet, 2001). In the following months, both the sponsor and the team carrying its name were the subjects of substantial negative publicity in the media. During this crisis, Miguel Rodriguez, the owner of Festina, declared that if an intention to use illegal drugs was proved, Festina would cease sponsorship of the team (Abt, 1998). Despite this, Festina maintained their contract with the team until its expiration in 2001.

Since Festina, doping scandals have continued in cycling, despite promises from cyclists, teams and race organisers to solve the problem. Cyclists continued to test positive, and evidence has shown that the misuse has been organised. Shortly before the 2006 Tour de France, the Guardia Civil military and civilian police force in Spain raided clinics and several apartments in Madrid. They seized steroids, hormones, the endurance-boosting hormone EPO and nearly 100 bags of frozen blood and equipment for blood boosting. More than 200 leading athletes were involved in this doping network. As a consequence, nine leading cyclists were prohibited from starting the 2006 Tour de France (Abt & Macur, 2006).

Over the years, attitudes among sponsors and TV broadcasters have changed – a development that also has affected cycling. In 2006, the Spanish insurance company Liberty Seguros ceased sponsoring its cycling team. The German tool company Würth announced it would withdraw from sponsoring Astana, the team of Alexander Vinokourov (a Kazhakstani cyclist who tested positive to blood doping in the 2007 Tour de France). Both based their decisions on doping incidents (Tremlett, 2008; Fotheringham, 2006). Since then sponsors including Quick Step, Gerolsteiner, T-Mobile and Credit Agricole have all withdrawn from cycling. Some have explained their decisions as reactions towards the doping problem (Waddington & Smith, 2009).

In 2007, the annual Championship of Zurich and the Tour of Utah were cancelled due to lack of sponsors (Carvajal, 2007). In 2009, the Tour de Germany was cancelled due to lack of sponsors. This



was related to the ARD and ZDF (German public service broadcasters) decisions to not cover the Tour de France. According to ARD Chairman Fritz Raff, the doping cases had greatly reduced the sporting value of this premier event (USA Today, 2008).

This development in Germany, the biggest commercial sports market in Europe, was of particular importance. ARD was the key broadcaster of the Tour de France in Germany, and its withdrawal represented a major financial blow, because Germany had provided almost 40% of the Tour's TV revenue in previous years (Waddington & Smith, 2009). The ARD/ZDF decision was also a blow to the Union Cycliste Internationale (UCI) hopes of achieving CHF12 million (£6 million/€8 million) a year in its new deal with the European Broadcasting Union, commencing in 2009 (TV Sports Markets, 2008).

IFM, a German-based sports research company which measures sponsorship impact, argued in 2007 that cycling had plunged as a marketing investment. Reductions in live audience were registered during the early season, pro-tour events. As an example, the Ronde van Vlaanderen race in Belgium saw a 77% decline in TV ratings compared to the previous year. This drop reduced the value of cycling sponsorships, according to Jens Seeberger, spokesman for IFM (Carvajal, 2007). Professional cycling is a highly commercialised sport and it would not continue in its present form without the continued large-scale financial backing of sponsors (Waddington & Smith, 2009).

Other sports have been through similar scandals, with severe consequences, among them cross-country skiing. During the 2001 Nordic World Ski Championship in Lahti, Finland, a total of six Finnish cross-country skiers were sanctioned for violations of the doping regulations (Laine, 2006). This championship was memorably described as a "blood-freezing" event by Virtapohja (2002). The scandal reduced the commercial value of cross-country skiing in Finland: one year after the scandal, financial losses of the Finnish Ski Association (FSA) exceeded €3 million (Helsingin Sanomat, 2002). Support from sponsorship and corporate partners for the cross-

country skiing branch of the Finnish Skiing Association did not reach pre-2001 Championship levels until 2005 (Helsingin Sanomat, 2005).

These examples illustrate that doping can affect sports negatively. The next section discusses some of the factors that have been documented to influence the demand for sport, and to what degree they can be affected by doping exposures.

Theoretical background

Demand for watching sports contests

The literature has split the demand for sport into two subcategories, *direct demand* and *derived demand* (Borland & McDonald, 2003).

Types of *direct demand* are:

- Demand for live attendance at sporting contests
- Demand for watching sporting contests on a pay-per-view basis.

Derived demand comes from commercial stakeholders willing to spend resources on elite sports because of the direct demand from *sports fans* and *sports spectators*. Positive promotion of the stakeholder and their products are the main objectives.

Types of *derived demand* can be:

- Television, radio and Internet broadcasters seeking inputs to the production of a programming content, to sell to advertisers and/or to sell on a subscription or pay-per-view basis to individuals and organisations
- Organisations seeking input to marketing campaigns, to establish or enhance the brand name and reputation of their products through advertising and/or sponsorship
- Organisations selling merchandise with an identity that is associated with sporting teams, leagues, events or individual athletes



- Stadium/venue owners seeking input to the production of an entertainment package, to sell seats at their stadia to individuals and organisations, and to sell marketing opportunities to advertisers/sponsors.

The introduction presented several examples where doping scandals had influenced the derived demand, both from TV broadcasters and from sponsors, because doping scandals are seen to affect direct demand, i.e. from the general public. Sponsors may be afraid of the reaction from their current and potential customers, clients and the public. Doping scandals do not correspond with values the sponsors wish to be associated with. Doped athletes represent negative media attention, which in turn can promote the companies' image negatively. This, of course, is the opposite of a sponsor's intentions in becoming involved in a high-profile elite sport.

Commercial broadcasters give priority to sports that attract interest from viewers. If doping reduces people's interest in sport, this will influence how much time and money TV broadcasters are willing to spend.

The following section focuses on some of the variables that have been documented to influence the direct demand for sport, and which we consider to be of special interest in relation to doping. (See Wann et al, 2001, and Borland & McDonald, 2003, for a complete overview.) For this research, we concentrated on the following variables:

- Uncertainty of outcome
- Identification with teams/athletes motive
- Calculative motive

Uncertainty of outcome

Uncertainty of outcome is a key characteristic of sports competitions that distinguishes them from other goods and services (Gratton & Taylor, 2000). Spectators prefer some degree of uncertainty as to the outcome of a competition (Neal, 1964). According to Noll (1974), the stronger the uncertainty, the higher the public demand will be. This phenomenon has

received substantial attention in the literature, particularly from sport economists. (For an overview, see Borland & McDonald, 2003.) It applies to both individual sports and team sports, and has to do with the joint nature of production in professional sport (Gerrard, 2000).

Doping may influence the uncertainty of outcome in several ways. Let us imagine that doping is not being used by anyone initially. If so, it is the underdogs that will benefit most from taking up doping. This in turn may narrow the gap between the competitors at the top and the bottom, and hence improve the uncertainty of outcome. However, if doping becomes common among the underdogs, the best athletes will find themselves forced to adopt the same behaviour. As a result, the majority of the athletes might take up doping, which could then reflect the initial relative strengths of competitors, assuming that doping had the equivalent effect on all athletes. However, it has been documented that doping substances will have different effects on different athletes (Bahrke & Yesalis, 2002).

Another problem with transferring such approaches to reality is that we know neither which athletes dope nor when they started to use dope. This makes us unable to identify those who, initially, were the best performers, i.e. before they took up doping. Those who everybody regards to be the best and most talented athletes may have used doping from the beginning of their career.

Other factors further complicate the effects doping can have regarding the ranking order of athletes. Some will not use doping because of ethical scruples. Furthermore, the risk of being exposed will be emphasised differently. Hence, it is complicated to predict how doping will affect the *uncertainty of outcome*. However, the fact that the uncertainty of outcome is a key characteristic that makes sports competitions different from other commodities makes it interesting to investigate the correlation between its importance and attitudes towards doping among spectators.



Identification with teams/athletes

Some sports spectators feel psychologically connected to a team or a specific player/athlete (Guttmann, 1986; Wann, 1997). Among fans with a high level of *identification*, the role of team follower is a central component of their identity. The team becomes an extension of the individual; the team's successes become the fan's successes, and the team's failures become the fan's failures. Such fans are usually very faithful towards their heroes, and hence also towards the sport. This makes it interesting to investigate their attitudes towards doping. It cannot be taken for granted that they will continue to cultivate their heroes. Some fans might be willing to forgive their heroes. Accusations against the teams/athletes they support can be regarded as accusations against themselves. Therefore, some fans may simply dismiss the accusations, no matter how well they are proved. Others might react differently and disassociate themselves from the athletes/teams.

Calculative motive

Some individuals are attracted to sport because of the potential economic gains from sports gambling. Many sports gamblers see sport fandom as an opportunity to acquire financial gains, and they are driven to consume sport through an economic motive. They are, by definition, not sports fans but persons who participate simply for the potential monetary reward. In the literature, this is known as the *calculative motive* (Wann et. al., 2001).

In recent years, technological innovations have revolutionised the opportunities to bet on sport. Compared to a few years ago, it is now possible to bet not only until shortly before the start of a contest but also during the contest. This development can attract to a sport more people with the calculative motive. Doping, however, may affect this. Although initially it may reduce the gap between underdogs and the best athletes, a number of other effects can work in different directions, as discussed above; some increase the *uncertainty of outcome*, while others reduce it.

Those who are attracted to sport mainly for betting will make efforts that maximise their ability to predict the outcome of the contests. Their aim is to handle the uncertainty of outcome better than others. This is what brings them the (extra) rewards.

The fact that doping has an element of secrecy can make this job more difficult compared to a situation where there is no doping. The doping adds an extra 'lottery dimension' to the contest. Those who bet will also have to predict whether athletes use dope and the effect this may have on the results. Furthermore, there is also a risk that some of the winners may be exposed and therefore disqualified.

For these reasons we think it likely that people who are attracted to sport mainly through the calculative motive will be more negative towards doping than other groups. This assumes that they are risk averse. Consequently, sports that are burdened by a number of doping incidents will risk losing the fans that are first and foremost driven by this motive.

The empirical section below presents regression analysis to investigate the correlation between the variables discussed in this section and the attitudes towards doping. Additionally, it takes into account people's age and their interest in sport.

Methodology

The data were collected by Norfakta Markedsanalyse AS (a Norwegian research marketing company). The company has about 70 interviewers and specialises in data collection by telephone interview. The target group for this survey was people that were interested in sport, i.e. those who graded their interest at 3 or more on a scale from 1 to 10. People who grade their interest in a sport at 1 or 2 are unlikely to spend much time and money watching, either on TV or at arenas. This group was therefore not included.

The survey was conducted by telephone interviews, 30% of which were via mobile. A total of 20,889 calls were conducted and 7,744 persons contacted.

**TABLE 1** What can be accepted of performance-enhancing substances and stimulants?

	ACCEPTABLE	MAY BE ACCEPTABLE	NOT ACCEPTABLE
FOOD SUPPLEMENT EG. COD-LIVER OIL, VITAMINS AND MINERALS	96.8	2.2	1.1
FOOD SUPPLEMENTS CONTAINING SUBSTANCES THAT IMPROVE THE ABILITY TO QUICKLY RECOVER AFTER HARD TRAINING	30.1	37.9	32.1
HIGH-ALTITUDE CHAMBER	30.0	34.4	35.6
EPO AND OTHER SUBSTANCES THAT IMPROVE ENDURANCE	1.8	3.7	94.5
ANABOLIC STEROIDS, GROWTH HORMONES AND SIMILAR SUBSTANCES THAT MAKE IT POSSIBLE TO INCREASE THE QUANTITY OF TRAINING AND MUSCLE STRENGTH	0.7	0.8	98.6
AMPHETAMINE AND SIMILAR DRUGS THAT INCREASE THE ABILITY TO TOLERATE HARD TRAINING AND PAIN DURING CONTESTS	0.4	0.9	98.7

Of these, 1,057 satisfied the target group definition and were willing to be interviewed. In total, 925 persons completed the interview, with an average interview duration of 14.8 minutes. This constituted a response rate of 16%, which is normal for the general population. Of the 925 respondents who completed the interview, 50.9% were men and 49.1% women. This does not correspond with the pattern of sample that first picked up the phone, where women represented the majority. The most likely reason for this is that men in general are more interested in sport than women. It is well documented that the more interested people are in a topic, the more willing they are to be interviewed about it (Ringdal, 2007). Among the 925 respondents, the average sports interest among men was 7.28 and among women it was 6.26. We regard the sample to be representative for the Norwegian population aged 15 or older who are interested in sport.

The empirical section first presents an overview of respondent attitudes and opinions about doping in elite sports, including what they regarded as appropriate reactions from commercial actors such as TV broadcasters and sponsors. This is followed by regression analyses, which investigated factors that influenced people's attitudes towards doping.

The explanatory power of the regressions was

moderate – as the low adjusted R squared values indicate. Therefore, one has to be careful about the strength of conclusions. It is also important to note that these regressions (Tables 4–8) only involve men. The adjusted R squared values were significantly lower when both genders were included in the regressions. Therefore, it is correct to say that the model presented in this paper provided some insight into men's attitudes towards doping, while further research, based on different theoretical and empirical approaches, is necessary to explain the factors that influence women's attitudes. The Durbin Watson statistics and the VIF indexes show that the data were unaffected by autocorrelation or multicollinearity.

Results

Table 1 provides an overview of which performance-enhancing substances and stimulants the respondents accepted. This involves pure doping products as well as traditional food supplements, vitamins and minerals, which are legal. In addition it also involved so-called 'grey zone' products, such as food supplements containing substances that improve the ability to recover quickly after hard training, and the use of high-altitude chambers.



Doping in elite sport

TABLE 2 Opinions on doping – mean value

(1 = doping is very rare, 10 = doping is very common). The brackets present the standard deviations.

SPORTS	INTERNATIONAL ATHLETES		DOMESTIC ATHLETES	
	MEAN (SD)	95% CONFIDENCE INTERVAL	MEAN (SD)	95% CONFIDENCE INTERVAL
CYCLING	7.27 (2.108)	7.13 - 7.41	3.89 (2.375)	3.74 - 4.05
ATHLETICS	6.21 (2.014)	6.08 - 6.34	3.74 (2.094)	3.60 - 3.88
BOXING	6.07 (2.252)	5.92 - 6.22	4.16 (2.260)	4.01 - 4.32
CROSS-COUNTRY SKIING	5.34 (2.024)	5.21 - 5.47	3.04 (2.089)	2.91 - 3.18
ICE HOCKEY	4.93 (1.936)	4.80 - 5.06	3.37 (1.897)	3.24 - 3.49
BIATHLON	4.59 (2.117)	4.45 - 4.73	2.79 (2.058)	2.65 - 2.92
SKATING	4.51 (2.072)	4.37 - 4.65	2.88 (1.915)	2.75 - 3.00
BASKETBALL	4.49 (1.964)	4.36 - 4.63	2.91 (1.819)	2.79 - 3.04
ALPINE	3.69 (1.993)	3.95 - 3.71	2.61 (1.831)	2.49 - 2.73
SNOWBOARD	3.72 (2.040)	3.58 - 3.85	2.70 (1.863)	2.58 - 2.83
FOOTBALL	3.68 (1.806)	3.56 - 3.80	2.51 (1.701)	2.40 - 2.62
HANDBALL	3.38 (1.748)	3.27 - 3.50	2.35 (1.630)	2.24 - 2.46
SKI JUMPING	3.17 (1.945)	3.05 - 3.30	2.30 (1.743)	2.19 - 2.42
MOTOR SPORT	2.75 (1.810)	2.63 - 2.88	2.19 (1.613)	2.08 - 2.30

The results clearly indicated no acceptance of 'pure' doping substances such as EPO, anabolic steroids and amphetamine. On the other hand, the overwhelming majority were positive towards the use of traditional food supplements, vitamins and minerals. The results were mixed with regard to so-called 'grey zone' stimulants.

Opinions on the use of doping in elite sport

Table 2 shows the respondents' opinions on the use of doping among elite athletes in the 14 sports the survey investigated – in other words, whether doping was common or rare. A scale from 1 to 10 was used, with 1 indicating that doping was very rare, while 10 indicated that it was very common. The results revealed that people were more suspicious towards international athletes than towards domestic athletes. These differences were significant ($p < 0.01$) for all the 14 sports, according to t-tests. One reason for this may be that many people have a tendency to think

better of themselves than of others – in other words, chauvinism. However, it is also worth bearing in mind that the number of Norwegian athletes that have been involved in doping is quite moderate compared to those of other nations.

Cycling was top of the 'bad list', probably due to the number of scandals surrounding the Tour de France. Athletics and cross-country skiing have also had their scandals over the years, which can explain their high positions on the bad list.

The survey also investigated opinions on how commercial stakeholders involved in sport should react towards athletes and teams exposed in doping. These questions were based on a Likert scale from 1 to 10 (1 = totally disagree, 10 = totally agree). One motivation behind these questions was to investigate whether the tendency among sponsors and TV broadcasters to withdraw from doping sports actually corresponds to the views of the general public. As regards the questions about how broadcasters should



TABLE 3 What do you regard as appropriate reactions from commercial stakeholders towards athletes being exposed in doping

	MEAN	95% CONFIDENCE INTERVAL	SD
SPONSORS SHOULD REDUCE THE SUPPORT TO ATHLETES WHO ARE EXPOSED IN DOPING	8.82	8.67-8.96	2.303
SPONSORS SHOULD WITHDRAW FROM SPORTS WITH REPEATED DOPING EXPOSURES	8.60	8.45-8.75	2.355
TV BROADCASTERS SHOULD CONTINUE BROADCASTING THE EVENT – BUT USE LARGE RESOURCES TO FOCUS ON DOPING	7.40	7.24-7.56	2.500
SPONSORS SHOULD DEMAND THE MONEY BACK FROM ATHLETES/SPORTS FEDERATIONS IN CASES OF DOPING EXPOSURES (TABLE 7)	7.37	7.20-7.55	2.732
SPONSORS SHOULD WITHDRAW FROM SPORTS AT FIRST-TIME DOPING EXPOSURE (TABLE 5)	6.78	6.57-6.98	3.020
I WILL BE LESS INTERESTED IN PURCHASING PRODUCTS FROM SPONSORS INVOLVED IN SPORTS THAT ARE EXPOSED TO DOPING (TABLE 6)	5.97	5.73-6.15	3.176
TV BROADCASTERS SHOULD QUIT BROADCASTING FROM EVENTS WITH REPEATED DOPING EXPOSURE (TABLE 8)	5.71	5.50-5.92	3.213
COMMERCIAL ACTORS (TV/SPONSORS) CONTINUING TO BE INVOLVED IN DOPING SPORTS/EVENTS ARE ACCOMPLICES IN DOPING (TABLE 4)	5.52	5.35-5.69	2.620

react, the respondents were asked to imagine a sporting event with repeated doping scandals, such as the Tour de France. The sponsor-related questions speak for themselves. Table 3 shows that the majority were in favour of tough reactions to athletes involved in doping. Average values of 8.82 and 8.60 indicated strong backing for sponsors that either reduced their support or withdrew from ‘doping sports’ such as cycling. For these two reactions (reduction of support and withdrawal), 86% and 80% respectively graded their agreements at 8 or higher. A large proportion supported the idea that athletes and sports federations that were exposed in doping should pay back the support of their sponsors (average value = 7.37; 58% in the 8-10 interval).

Regression analyses

The variables in Table 3 were also potential candidates as dependent variables in the regression analysis. The results tell us that an overwhelming majority did not accept elite athletes using doping substances. This universal agreement also reduced the ability to investigate which variables affected their opinions.

However, it is likely that such questions stimulate people to answer in a manner of political correctness. Negative effects of doping are well documented. Therefore, very few (if any) openly declare themselves positive towards the use of doping among elite athletes. It was therefore necessary to dig a little deeper into the material to explore differences in opinions. This does not mean that we distrusted people who declared themselves negative towards doping, but that we believe that a ‘no to doping’ response can hide differences in attitude. Some will consider doping as a more serious, and negative, threat to sport than others. One way of uncovering such differences is to ask for opinions about appropriate reactions from commercial actors, such as TV broadcasters and sponsors. This is another reason behind some of the questions in Table 3.

We ran five alternative regression analyses. These regressions had different dependent variables but identical independent variables. The results are presented in Tables 4–8. The dependent variables were related but of a different character. The dependent variable in Table 4 measured to what



TABLE 4 Commercial actors who continue to be involved in doping sports are accomplices in doping

R-SQUARE	ADJUSTED R-SQUARE		ST. ERROR OF THE ESTIMATE	DURBIN WATSON			
	.154		2.46961	2.058			
	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T-VALUE	SIGN.	COLLINEARITY STATISTICS	
B	STD. ERROR	BETA	TOLERANCE			VIF	
0.164							
CONSTANT	4.472	.566		7.904	.000		
AGE ²	.000	.000	.302	6.881	.000	.965	1.037
SPORTS INTEREST	-.238	.064	-.180	-3.692	.000	.781	1.281
UNCERTAINTY	.156	.048	.141	3.234	.001	.980	1.020
IDENTIFYING	.019	.052	.017	.367	.714	.824	1.213
CALCULATIVE	.157	.047	.150	3.337	.001	.920	1.087

TABLE 5 Sponsors should withdraw from sport at first time doping exposure

R-SQUARE	ADJUSTED R-SQUARE		ST. ERROR OF THE ESTIMATE	DURBIN WATSON			
	.029		3.024	2.085			
	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T-VALUE	SIGN.	COLLINEARITY STATISTICS	
B	STD. ERROR	BETA	TOLERANCE			VIF	
.039							
CONSTANT	5.871	.688		8.532	.000		
AGE ²	.000	.000	.114	2.437	.015	.963	1.038
SPORTS INTEREST	-.123	.079	-.081	-1.555	.121	.778	1.285
UNCERTAINTY	.124	.059	.098	2.107	.036	.980	1.021
IDENTIFYING	.012	.064	.009	.182	.856	.820	1.219
CALCULATIVE	.131	.057	.109	2.281	.023	.923	1.083

TABLE 6 I will be less interested in purchasing goods from sponsors involved in “doping sports/athletes”

R-SQUARE	ADJUSTED R-SQUARE		ST. ERROR OF THE ESTIMATE	DURBIN WATSON			
	.109		2.956	2.107			
	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T-VALUE	SIGN.	COLLINEARITY STATISTICS	
B	STD. ERROR	BETA	TOLERANCE			VIF	
.119							
CONSTANT	5.946	.674		8.820	.000		
AGE ²	.000	.000	.213	4.724	.000	.962	1.039
SPORTS INTEREST	-.226	.077	-.146	-2.936	.003	.784	1.276
UNCERTAINTY	.144	.057	.112	2.512	.012	.978	1.022
IDENTIFYING	-.102	.062	-.080	-1.638	.102	.827	1.210
CALCULATIVE	.208	.056	.169	3.683	.000	.924	1.083



TABLE 7 Sponsors should demand the money back from athletes/teams exposed in doping

R-SQUARE	ADJUSTED R-SQUARE		ST. ERROR OF THE ESTIMATE	DURBIN WATSON			
	.003		2.691	2.046			
	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T-VALUE	SIGN.	COLLINEARITY STATISTICS	
B	STD. ERROR	BETA	TOLERANCE			VIF	
.014							
CONSTANT	7.048	.615		11.467	.000		
AGE ²	6.112E-5	.000	.037	.781	.435	.965	1.036
SPORTS INTEREST	-.076	.070	-.057	-1.086	.278	.787	1.271
UNCERTAINTY	.105	.052	.095	2.017	.044	.980	1.021
IDENTIFYING	.049	.057	.045	.871	.384	.831	1.204
CALCULATIVE	-.022	.051	-.021	-.436	.663	.924	1.082

TABLE 8 TV stations should stop broadcasting from events with repeated doping exposure

R-SQUARE	ADJUSTED R-SQUARE		ST. ERROR OF THE ESTIMATE	DURBIN WATSON			
	.106		3.124	2.032			
	UNSTANDARDISED COEFFICIENTS		STANDARDISED COEFFICIENTS	T-VALUE	SIGN.	COLLINEARITY STATISTICS	
B	STD. ERROR	BETA	TOLERANCE			VIF	
.116							
CONSTANT	5.087	.709		7.173	.000		
AGE ²	.001	.000	.276	6.145	.000	.963	1.039
SPORTS INTEREST	-.190	.081	-.117	-2.342	.020	.782	1.279
UNCERTAINTY	.147	.061	.108	2.423	.016	.980	1.020
IDENTIFYING	-.040	.066	-.030	-.609	.543	.825	1.213
CALCULATIVE	.094	.059	.073	1.582	.114	.922	1.085

degree the respondents regarded commercial actors, such as TV broadcasters and sponsors, who continued to be involved in doping sports, as actual accomplices in doping. The other regressions analysed what were considered to be appropriate reactions in cases of doping, from the respondents themselves, as well as from sponsors and TV broadcasters. The idea that sponsors should demand their money back from athletes/teams exposed in doping scandals has been addressed in previous research, e.g. by Haugen (2004) and Eber (2006), which both focused on how to reduce the economic incentives to doping. However,

the regression analysis that used this suggestion as the dependent variable was unsuccessful in explaining the variance. The F-statistic was so low that the regression was rejected ($p = 0.258$).

Only one of the independent variables (uncertainty of outcome) was significantly correlated with the dependent variable. Hence, the results in Table 3 documented that the majority backed the idea (mean = 7.37), while the regression analysis was unable to explain the variance of the variable. Additionally, the dependent variables were supplemented with age and sports interest.



Age

The regression analyses clearly confirmed that the older people were, the more negative they were towards doping. The fact that a squared function had the highest explanatory power indicated that the correlation grew along the age axis. This pattern applied to all variables, with the exception of the idea that sponsors should demand their money back from athletes and teams involved in doping.

Interest in sport

The more interested people were in sport, the more liberal were their attitudes towards doping. First, they tended to disagree that the commercial actors who continued to be involved in doping sports were accomplices in doping. Second, the same tendency of disagreement applied to the suggestion that TV stations should cease broadcasting events such as the Tour de France that had had repeated doping exposure. We can only speculate about the reasons for this pattern. One alternative may be that for this group, the desire to watch sport was stronger than the reluctance toward doping. Furthermore, they also tended to be less motivated to reduce their purchases from sponsors involved in sports where doping occurred than from others. For the remaining two variables that were tested (*sponsors should withdraw from sport at first-time doping exposures and sponsors should demand the money back from athletes/teams exposed in doping*), the regression analyses did not show any correlation with the dependent variable.

Uncertainty of outcome

Uncertainty of outcome turned out to be the variable with the strongest correlation with attitudes towards doping. The more the uncertainty of outcome was emphasised, the more negative people were towards doping. Indeed, this pattern applied to all the alternative dependent variables. Our data do not provide any information to indicate the reason for this. It may be that even if people have a preference for a

high degree of uncertainty, they do not wish this uncertainty to be affected by artificial means, such as through doping. They only accept uncertainty that is created by legitimate factors, such as talent, training methods, preparation and whatever permissible means can influence the ranking order of competitors.

Identifying with teams/athletes

The variable called identifying (with teams/athletes) did not show any correlation with the attitudes towards doping. Indeed, this applied to all the alternative dependent variables. This may indicate that those who strongly identify themselves with specific teams/athletes are less affected by doping scandals than others. These groups of fans support their heroes independently of whether or not they are 'clean'. One reason for this may be that if the emotions are strong, then people are willing to forgive illegal behaviour. They continue to cultivate their sports idols, independently of whether those idols use illegal substances. Another potential explanation is that this group of fans simply does not care as much as others do about doping and its negative effects.

Calculative motive

Respondents who emphasised the calculative motive were more negative towards doping than the others, a pattern that was reflected in three of the five regression analyses. We find such a pattern reliable for the reasons discussed above. Those who are attracted to sport mainly because of betting motives want to operate in conditions where they can handle the job of predicting the outcome without too many difficulties. Indirectly, it is the uncertainty of outcome that attracts them to sport. Their aim is to handle this better than others. Doping, however, complicates this job. From this perspective, the negative correlation that was documented in the regression analyses makes sense. Assuming this pattern is correct, the sports which are unable to solve the doping problem may find it harder to recruit and keep fans that particularly emphasise the calculative motive.



Conclusion

The first section of this paper presented anecdotal evidence, indicating that commercial stakeholders such as sponsors and TV broadcasters have become reluctant to become involved in sports that are repeatedly involved in doping scandals. This development has caused problems for sports such as cycling, where sponsors and TV broadcasters have withdrawn from events.

An empirical survey of more than 900 Norwegian respondents, which investigated views and attitudes towards the use of doping in elite sport, supported such reactions towards 'doping sports'. The overwhelming majority expressed non-acceptance of substances such as EPO, anabolic steroids and amphetamine, but had mixed attitudes towards so-called 'grey zone' substances and high-altitude chambers. The findings are similar to a long-term study (1995-2004) in Switzerland that documented increasing support for a comprehensive anti-doping strategy (Stamm et al, 2008).

Respondents were more suspicious towards international athletes than towards national elite athletes, and this pattern applied to all the 14 sports mentioned in the research interview.

The majority of respondents were in favour of strict reactions from sponsors towards athletes and sports involved in doping. This included reactions such as reductions in support to athletes. They also supported the idea that sponsors should withdraw from doping sports. The same applied to the suggestion that sponsors should demand their money back from athletes and sports federations involved in doping. These findings correspond to recommendations from Haugen (2004) and Eber (2006), which emphasise the importance of reducing the economic incentives to use illegal substances.

The regression analyses showed that the older people were, the more negative their attitude towards doping. Older people supported sanctions towards athletes to a much higher degree than did younger people. The fact that a squared function had the highest explanatory power indicates that the negative attitudes grew with age.

By contrast, people who were interested in sport expressed more liberal attitudes towards doping than others. They were less eager to punish the athletes and the sports governing bodies exposed in doping scandals. Furthermore, they did not blame to the same degree as other respondents TV broadcasters that continued to broadcast from doping events.

Finally, it is important to keep in mind that the regression models displayed low adjusted R-squared values, which is an indication of a poor model fit. The general model (including both genders) displayed a significantly lower degree of explanatory power than the pure 'male model'. Our model provides some explanation of men's attitudes towards TV broadcaster and sponsor involvement in sports and events with doping problems, but it was unsuccessful in explaining women's attitudes. Overall, this indicates that the theoretical framework and empirical modelling our study is built upon is somewhat limited in explaining variation in the dependent variables selected.

Despite successfully explaining demand for sport, the study has only limited success in explaining what forms people's attitudes towards doping in elite sport. Hence, further research is needed to provide insight into this phenomenon. This would also involve investigation into the reasons behind the correlations that were uncovered in our analyses. Future research should also consider factors and theoretical perspectives other than those presented in this paper.

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Biographies

Harry Arne Solberg is a professor of sports economics at Trondheim Business School, Sør-Trøndelag University College. He has been involved in research into the economic impacts of sport and sports activities, particularly for sporting events, sport and the media and, more recently, team sports economics.

Dag Vidar Hanstad is an associate professor in the Department of Cultural and Social Studies at the Norwegian School of Sport Sciences. His research interests include sports politics, doping and anti-doping, media, elite sport and organisational change.

Thor Atle Thøring is an assistant professor at Trondheim Business School, Sør-Trøndelag University College. His research interests includes analysis of the demand for sport.

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