

Development and validation of instruments to measure doping attitudes and doping beliefs

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ABSTRACT

Since 40 years ago athletes have been asked about their believes about drug usage in various studies and in the case of psychology behind doping athletes' perception and attitudes toward doping have been considered consistently. Doping scandals creating fairness issues for professional and Olympic organizations have become a major issue. One's attitude toward a given issue or entity can be impacted by personality traits, previous experiences, environmental factors, and characteristics of the attitude object. The aim of present study was to develop and validate the performance enhancement attitude scale and doping use belief which were used in Iranian elite martial artists. 160 elite athletes (120 males, 40 females) with the mean age of 22 (3.1) years who had activity records in Kick Boxing, O-Sport, Sumo, Wrestling, Jiu-Jitsu, Boxing and Muay Thai were chosen by categorical sampling method and they filled questionnaires voluntary. In order to measuring instruments consistency the Cronbach' alpha was utilized. The confirmatory factor analysis was used for measuring the instruments validation. The present paper suggests the researchers to accomplish the same study in the team sports and also non-contact sports to develop and validate the paper instruments for perceiving athletes' psychological conditions in using drug.

Key words: Doping attitude, Doping Beliefs

INTRODUCTION

Naturally occurring performance-enhancing substances have been known and used through human history [1]. The word doping originated from 'dop', a term that refers to a stimulant drink used in tribal ceremonies in South Africa during the eighteenth century [2]. Dop first appeared in an English dictionary in 1889, where it was described as a narcotic potion for reducing the performance of racehorses [2]. Athletes competing at the Ancient Greek Olympics used stimulants to increase their performance [3];[4]. Roman gladiators and medieval knights relied on the help of performance enhancing substances to be able to continue in combat situations despite tiredness and injuries [5];[6]. The emergence of the anti-doping movement, regulation and the advent of the list of banned substances of placed doping outside the officially accepted limits of performance enhancements [1]. Although the main reason behind anti-doping regulation was medical concern, having official rules against doping suddenly repositioned the use of pharmacological agents as cheating and unfair, and thus, eventually resulted in social stigmatization of athletes who used performance enhancing substances and/or methods [1]. The most recent definition of doping has been clarified by WADA: using prohibited performance enhancement substances and/or methods regarding clarified statements in WADA Code [7]. Since 40 years ago athletes have been asked about their believes about drug usage in various studies and in the case of psychology behind doping athletes' perception and attitudes toward doping have been considered consistently. Doping scandals creating fairness issues for professional and Olympic organizations have become a major issue. One's attitude toward a given issue or entity can be impacted by personality traits, previous experiences, environmental factors, and characteristics of the attitude object [8]. In a study by Alaranta et al. [9]

over 90% of participant athletes thought sport performance could be improved by using banned substances, though the vast majority of these athletes were not in favor of doping. Diacin, Parks, and Allison [10] conducted interviews with NCAA Division I and Division III male athletes to measure their attitudes toward drug use and drug testing. Similar to Alaranta *et al.* [9] findings and consistent with other existing research, results indicated that most athletes have a negative attitude toward drug use [11];[12]. The performance enhancement attitude scale and doping use belief questionnaire have been used in several studies such Petroczi [1];[13];[14], Breivik, Hanstad and Loland [15], Petr  czi, Aidman and Nepusz [16], Petroczi *et al.* [17], Manouchehri, Tojari and Ganjouei [18] and many other papers, and the aim of present study was to develop and validate the performance enhancement attitude scale and doping use belief which were used in Iranian elite martial artists.

MATERIALS AND METHODS

Participants

160 elite athletes (120 males, 40 females) with the mean age of 22 (3.1) years who had activity records in Kick Boxing, O-Sport, Sumo, Wrestling, Jiu-Jitsu, Boxing and Muay Thai were chosen by categorical sampling method and they filled questionnaires voluntary.

Measures

Performance Enhancement Attitude Scale [1]: The PEAS consists of 17 attitude statements measured on a six point Likert-type scale ranging from strongly disagree (1) to strongly agree (6). There were evidences from previous use that the scale is unidimensional and reliable, with Cronbach alpha values above 0.70 [1];[13];[14].

Doping Use Belief measures [14]: The DUB were operationally defined as expressions of presumed opinion regarding doping use, namely whether doping should be allowed for top and all level athletes (2 separate questions). Participants were asked to select one of the three responses: 'yes, without restrictions', 'yes, with restrictions' and 'absolutely not'. The Doping behavior latent variable was defined by two self-reported measures of doping behavior: current use of and past experience with performance enhancing substances. The internal consistency coefficients for both variables were reported 0.94 [14].

Methods

In order to measuring instruments consistency the Cronbach' alpha was utilized. The confirmatory factor analysis was used for measuring the instruments validation.

RESULTS

The results showed that from 160 participants, 120 individuals (75 %) were male and 40 individuals (25%) were female. The results from Table 1 demonstrated that the first question of doping believe had the biggest Mean (0.38) and SD (0.49) compared with second question Mean (0.23) and SD (0.44).

Table 1. Describing the Doping Believe queries

Queries	F			Distinctive	Mean	SD
	Absolutely not	Yes, but with restrictions	Yes, without restrictions			
1. Do you believe that performance-enhancing drugs/methods should be allowed for top level athletes?	100	59	1	BEL1	38.0	49.0
2. Do you believe that performance-enhancing drugs/methods should be allowed for all athletes?	123	36	1	BEL2	23.0	44.0

The results from Table 2 demonstrated that the first question of doping behavior had the biggest Mean (0.55) and SD (1.05) compared with second question Mean (0.10) and SD (0.39).

Table 2. Describing the Doping Behavior queries

Queries	F				Distinctive	Mean	SD
	I do not wish to answer	No	Yes, but only for treating a medical condition	Yes			
1. Have you ever had personal experience with banned performance-enhancing drugs and/or methods?	9	121	11	19	BEH1	0.55	1.05
2. Do you currently use banned performance-enhancing drugs?	7	148	5	0	BEH2	0.10	0.39

The results from Table 3 demonstrated that the item 9 of doping attitude scale had the biggest Mean (3.04) and the item 1 had the lowest Mean (1.73). And the item 15 had the biggest SD (1.82) and the item 1 had the lowest SD (1.20).

Table 3. Describing the statements of Performance Enhancement Attitude Scale

Statements	distinctive	Mean	SD
1. Doping is necessary to be competitive.	ATT1	1.73	1.20
2. Doping is not cheating since everyone does it.	ATT2	1.81	1.28
3. Athletes often lose time due to injuries and drugs can help to make up the lost time.	ATT3	2.92	1.55
4. Only the quality of performance should matter, not the way athletes achieve it.	ATT4	2.60	1.77
5. Athletes in my sport are pressured to take performance enhancing drugs.	ATT5	2.19	1.39
6. Athletes, who take recreational drugs, use them because they help them in sport situations.	ATT6	2.88	1.77
7. Athletes should not feel guilty about breaking the rules and taking performance-enhancing drugs.	ATT7	1.81	1.45
8. The risks related to doping are exaggerated.	ATT8	2.53	1.57
9. Athletes have no alternative career choices, but sport.	ATT9	3.04	1.74
10. Recreational drugs give the motivation to train and compete at the highest level.	ATT10	2.38	1.57
11. Doping is an unavoidable part of the competitive sport.	ATT11	2.50	1.53
12. Recreational drugs help to overcome boredom during training.	ATT12	2.93	1.67
13. There is no difference between drugs, fiberglass poles, and speedy swimsuits that are all used to enhance performance.	ATT13	1.81	1.31
14. Media should talk less about doping.	ATT14	2.18	1.73
15. The media blows the doping issue out of proportion.	ATT15	2.80	1.82
16. Health problems related to rigorous training and injuries are just as bad as from doping.	ATT16	2.35	1.59
17. Legalizing performance enhancements would be beneficial for sports.	ATT17	2.95	1.73

The results demonstrated that the doping believe base with Cronbach' Alpha 0.734, doping behavior base with Cronbach' Alpha 0.713, doping attitude base with Cronbach' Alpha 0.776 which was increased to 0.812 by omitting the statements 9-13-14-16 were acceptable (Table 4).

Table 4. Cronbach' Alpha coefficients for research variables

Variable	Believe	Behavior	Attitude
α	0.734	0.713	0.776
Omitted Question	-	-	9-13-14-16
Final α	-	-	0.812

The results from Table 5 demonstrate measuring model of doping believe, doping behavior and doping attitude in standard approximation base. The model Factor loads have shown the influence degree of variables and/or statements for explaining marks variance of main variable or factor in standard approximation base. In other word, factor load is demonstrating correlation degree for each observer variable (questionnaire query) with latent variable (Factors). For instance, the first question factor load in doping believe is 0.83. It means that first query explains 69% of doping believe variance. The error amount is 0.31. This Table also shows correlation indices for the named variables which all have become significant. The critical ranges of <-1.96 and >1.96 are significant relationships ($P < 0.05$).

Table 5. The results of measuring model (doping believe, behavior and attitude)

			Factor load	Error	Variance	Significance Coefficient
BEL1	←	BEL	0.83	0.31	0.69	8.51
BEL2	←	BEL	0.71	0.50	0.50	7.61
BEH1	←	BEH	1.00	0.00	1.00	17.83
BEH2	←	BEH	0.52	0.73	0.27	7.07
ATT1	←	ATT	0.66	0.56	0.44	8.61
ATT2	←	ATT	0.67	0.55	0.45	8.73
ATT3	←	ATT	0.37	0.86	0.14	4.45
ATT4	←	ATT	0.38	0.85	0.15	4.56
ATT5	←	ATT	0.49	0.76	0.24	6.03
ATT6	←	ATT	0.38	0.86	0.14	4.48
ATT7	←	ATT	0.61	0.62	0.38	7.84
ATT8	←	ATT	0.33	0.89	0.11	3.93
ATT10	←	ATT	0.49	0.76	0.24	5.98
ATT11	←	ATT	0.45	0.80	0.20	5.45
ATT12	←	ATT	0.41	0.83	0.17	4.96
ATT15	←	ATT	0.36	0.87	0.13	4.25
ATT16	←	ATT	0.48	0.77	0.23	5.83

[BEL= Doping Believe, BEH= Doping Behavior, ATT= Doping Attitude]

Goodness of fit statistics like ($\chi^2 = 333.61$) which is less than 3 by the ratio of ($df = 117$), ARMSE = 0.078, and other statistical distinctive indicated acceptable fit (Table 6).

Table 6. The model fit results (Doping Believe, Behavior, and Attitude)

Normed Fit Index (NFI)	0.93
Non-Normed Fit Index (NNFI)	0.93
Parsimony Normed Fit Index (PNFI)	0.83
Comparative Fit Index (CFI)	0.94
Incremental Fit Index (IFI)	0.95
Relative Fit Index (RFI)	0.93
Goodness of Fit Index (GFI)	0.90
Adjusted Goodness of Fit Index (AGFI)	0.85

CONCLUSION

Regarding the results came from studies of Petroczi [1];[13];[14], Breivik, Hanstad and Loland [15], Petróczi, Aidman and Nepusz [16], Petroczi et al. [17], Manouchehri, Tojari and Ganjouei [18] the models of doping use belief questionnaire and performance enhancement attitude scale which was used in Iranian elite martial artists had good fit. Each of the statements in PEAS was a significant predictor of athletes' attitudes toward doping, although some statements have been omitted from scales in the present study to increase the Cronbach Alpha. Moreover, each of the observer variables of the research had significant relationship with the latent variable. The present paper suggests the researchers to accomplish the same study in the team sports and also non-contact sports to develop and validate the paper instruments for perceiving athletes' psychological conditions in using drug.

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