The prevalence of energetic drugs use and the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping

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Abstract

Objective: One of the problems in sports community is the use of energetic drugs by athletes. The purpose of present study was examining the prevalence of energetic drugs use and the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping.

Methodology: This study was a cross-sectional survey. A number of 389 bodybuilders in Kermanshah were selected by clustered sampling; they were asked to complete the scales of attitude toward doping and physical self-concept, sensation seeking, perfectionism, and performance enhancement. Descriptive statistics, Pearson correlation and discriminant analysis were used for analyzing the data.

Results: The results showed 32.1% of bodybuilders had used energetic drugs. There was significant relationship between perfectionism (r=0.302), sensation seeking (r=0.31), physical self-concept (r=-0.422) and attitude toward doping. According to the results of discriminant analysis, perfectionism, sensation seeking and physical self-concept significantly discriminated bodybuilders with positive and negative attitude toward doping; the role of these variables in discriminating two groups was 0.335, 0.362, and 0.406, respectively.

Conclusions: The results of this study confirmed the previous researches’ findings and the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping.

Keywords: Energetic drugs, perfectionism, sensation seeking, physical self-concept, bodybuilders

Introduction

The use of performance enhancing drugs by athletes for improving the physical performance has a long history. According to Bahrke & Yesalis, the use of energetic drugs by heroes (gladiators) has been reported in some cultures such as Ancient Egyptians, Greeks and Romania (Ehrnborg, 2009). In the study of dietary supplements for college athletes, Martine et al. (2005) found that 6.98% of team members have used dietary supplements; Men more than women have consumed supplements such as sports drinks, carbohydrate gels, protein powders and creatine (Ryna and Susan, 2005). According to the researches, 63.3% of Iranian athletes have used -at least once- the performance enhancing drugs; the prevalence of using these drugs by them was 7.54 (Kashi et al., 2006). The prevalence of using energetic drugs by Iranian bodybuilding athletes (Kargarfard and Kashi, 2007) and elite female athletes was 41.9 and 15.4, respectively (Kargarfard et al., 2008). The frequency of using energetic drugs by bodybuilding athletes was 38.3 percent (Pasharvesh et al., 2004).
The attitude toward doping and improved performance is a judgment evaluated by the performance resulted from doping and energetic drugs; it is related to the personal experiences and is determined by personal values and attitudes. The orientation toward victory is important in attitudes toward doping; positive attitude towards doping in drug users is more than those who do not use them. Based on the findings of Brisonneau, some athletes believe that hard work is not enough for enhancing performance and energetic drugs are necessary (Petro´czi and Aidman, 2009). Positive attitudes towards doping among men are more than women and this has led them to greater use of energetic drugs (Moran et al., 2008). According to Burns, perfectionism is the search for unreasonable and very high standards in the field of personal goals and expectations (Pearson and Gleaves, 2005). Perfectionist athletes have cognitive ruminations about the favorable success; they are concerned about their mistakes; they doubt about their performance (Williams and Leffingwell, 1996). Perfectionism is a predictor of dissatisfaction about body muscles (Grammas and Schwartz, 2009). For achieving appropriate standards in the beauty, bodybuilders do risky behaviors including drug use more than other athletes. Bodybuilders with lower self-esteem get higher scores on negative perfectionism (Blouin and Goldfield, 1995) and perfectionism is positively correlated with positive attitudes toward doping (Moran et al., 2008).

According to Zuckerman, sensation seeking is the need to experience complex, fresh, varied emotions and the tendency to accept physical and social risks related to these experiences (Zakletskaja et al., 2009). High sensation seeking is associated with mental, psychological, and reinforcement effects of drugs such as alcohol (Fillmore et al., 2009), amphetamines (Kelly et al., 2009; Kelly and Robbins et al., 2006, Stoops et al., 2007), methylphenidate (Chat, 1994), benzodiazepines (Kelly et al., 2009) and nicotine (Perkins et al., 2000). Sensation seeking is associated with drug abuse; it is important factor in the initiation of alcohol use (Cadoret et al., 1995). Sensation seeking in opioid dependent individuals is more than normal persons (Franques, et al., 2003). Individuals with high sensation seeking report positive mental experiences about drug use (James, 2010); and they use greater amounts of marijuana, alcohol and tobacco (Martins et al., 2008).

According to Shavelson, et al (1976), physical self-concept is the personal perception of shape and appearance (based on experience) and environment interpretation using physical domain. Physical self-concept is associated with dissatisfaction of body image; it is related to the difference between athlete’s present picture of his/her body and athlete’s ideal picture of his/her body (Kelly, 2004). The use of performance enhancing drugs is a proper means for achieving high self-esteem through physical appearance and physical performance (Castillo and Comstock, 2007). Doping users have high dissatisfaction about their body image, more negative moods, high depression, high problematic personality characteristics, more concerns about health, and more behavioral problems (Irving et al., 2002; Lovstakken et al., 1999). Doping in athletes is associated with variables such as body image, self-esteem, anxiety, aggression (Hartgens and Kuipers, 2004, Laure et al., 2004), and lower body self-esteem (Schirlin et al., 2009).

This study aimed to examine the prevalence of energetic drugs use and the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping. The role of these variables in doping and attitudes toward doping is not mentioned in previous researches. Considering that doping users are in addition to serious health risks-exposed to behavior and personality disorders and violent behaviors (Estroff, 2001) and this may lead to drugs and alcohol use (Striegel et al., 2006), thus, the determination of psychological factors associated with attitudes towards doping (perfectionism, sensation seeking, and body self-concept) can help to create a healthy athletic environment among professional and amateur athletes.

**Materials and Methods**

This study was a cross sectional survey. The main objective of this research was studying the prevalence of using doping among bodybuilding athletes. Also, another goal was examining the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping; so the correlation and retrospective methods were used, too. The population consisted of total bodybuilding athletes (N=2500) in Kermanshah who had a history of at least 3 years of exercise. A number of 389 bodybuilders in Kermanshah were selected by Kareci and Morgan formula (Khoiyneyjad, 2001). According to the formula, the sample size in this study was 333 subjects; but due to high external validity of the study, 400 bodybuilding athletes were selected as final sample (400 = N). This statistical sample was selected based on cluster sampling method. In this case, at first, all sports clubs in Kermanshah were identified (approximately 50 clubs) and 14 sport clubs were selected randomly; then, the individuals who had a history of at least 3 years exercise were selected. Finally, 413 questionnaires were distributed among the athletes. After collecting the questionnaires, 24 questionnaires were excluded because of incomplete filling and the final sample was reduced to 389 cases.
Data collection tools included in this study was:

1. The scale of attitudes toward doping and performance enhancement: This scale contains 17 items. The respondents answer each item on a 6-point Likert scale from "completely disagree" to "completely agree". The scores range from 17 to 102. High scores indicate a positive attitude towards doping and low scores indicate negative attitudes towards doping. This scale has a good reliability. Its Cronbach's alpha coefficient is in the range of 0.71 to 0.91 and its retest reliability have been reported equal to 0.82 (Petroczi and Aidman, 2009). In the present study, Cronbach's alpha coefficient for this scale is equal to 78/0.

2. The scale of perfectionism in sport: This scale was developed by Dune and colleagues (2005). It has 30 items. The respondents answer each item on a 5-point Likert scale from "completely disagree" to "completely agree" (34). This scale has 4 subscales of personal standards (7 items), excessive worry about mistakes (8 items), perceived parental pressure (9 items), and perceived coach pressure (6 items). Through the Cronbach's alpha, the internal consistency of this scale and its subscales has been reported from 0.76 to 0.89 (Abolghasemi and Nariman, 2003). Bahrami (2007) reported that the Cronbach's alpha coefficient in subscales including personal standards, excessive worry about mistakes, perceived parental pressure and perceived coach pressure was 0.77, 0.71, 0.80 and 0.72, respectively. He gained a positive correlation between this scale and its subscales and competitive anxiety (Bahrami, 1994).

3. The scale of sensation seeking: This scale was developed by Arnett with 20 items and two subscales: freshness and intensity. The respondents answer each item with "describes me very well", "somewhat describes me", "does not describe me well" and "does not describe me at all. Arnett reported that the internal reliability of the scale and subscales including intensity and freshness was 0.70, 0.64, and 0.50, respectively (Arnett & Sensation, 1994). In assessing the validity of the scale, a correlation between 0.35 and 0.50 has been obtained between this scale and Zuckerman scale; and the Cronbach's alpha coefficient for scale and subscales including intensity and freshness have been reported 0.74, 0.72, and 0.77, respectively (Ghafari, 2005).

4. Physical self–concept profile: This profile was developed by Fax in 1990. It has 30 items and five subscales. Respondents answer each of those items on a four-point Likert scale from 1 to 4. Subscales include physical self-worthiness (general feeling of pride, happiness, satisfaction and physical self-confidence), athletic competition (sport confidence, athlete's ability and athlete's ability to learn), physical attractiveness (the ability to maintain physical attraction, trust in appearance), physical strength (confidence in situations requiring strength, perceived strength and muscle growth) and physical conditions (adaptation, physical endurance, ability to do exercises, and confidence to the training exercises). Fax reported that internal consistency of this scale was from 0.81 to 92% in both men and women (Kelly, 2004). According to Sonstroem, et al (1992), its reliability among adults was high; its Cronbach's coefficient is between 0.90 to 0.91 (24). In the present study, Cronbach's alpha coefficient for this scale was equal to 0.71.

Research process: after sample selection, researchers visited the selected clubs; they read the guide to respondents and distributed the questionnaires among athletes. Athletes answered the questions in 30-45 minutes at their clubs. After collecting the questionnaires, the data were analyzed by SPSS software using Pearson correlation analysis and discriminant analysis. Those with scores higher than 4.58 ± 50.09 were placed in the positive attitude group and those with scores lower than this value were placed in the negative attitude group.

Results

Descriptive results showed that 30.4% of participants had a history of 3 years exercise, 40.4% had a history of 4 to 5 years exercise, 19.3% had a history of 6 to 7 years exercise and 9.8% had a history of 8 years and more exercise. Also, 55.8% of participants were single and 44.2% were married. The percentage of high school, diploma, BA, and MA or higher degrees was 25.4, 30.3, 34.7, and 9.5, respectively. The mean age of participants was 27.07±5.6. The average of participants who has a positive attitude and negative attitude toward doping was 27.25 ± 5.77 and 26.89 ± 5.145, respectively. The correlation results showed that there was a significant relationship between personal standards (r=0.397), excessive worry about errors (r=0.298) and perfectionism (r=0.302), between freshness (r=0.539) and sensation seeking (r=0.31), between physical self-worthiness (r=0.431), physical attractiveness (r=0.366), and physical strength (r=0.38) and between physical self-concept (r=0.422) and attitude towards doping.
Table 1: Mean and standard deviation of the predictor and criterion variables and the relationship between perfectionism, body self-concept, sensation seeking and attitudes toward doping in bodybuilding athletes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>criterion variable</th>
<th>(attitude toward doping)</th>
<th>Correlation</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfectionism</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Personal Standards</td>
<td>52.17</td>
<td>4.58</td>
<td></td>
<td>0.397</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>2 - excessive worry about mistakes</td>
<td>16.46</td>
<td>4.99</td>
<td></td>
<td>0.298</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>3 - Perceived parental pressure</td>
<td>14.89</td>
<td>4.35</td>
<td></td>
<td>-0.013</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>4 - Perceived Coach Pressure</td>
<td>14.36</td>
<td>4.63</td>
<td></td>
<td>0.012</td>
<td>0.749</td>
<td></td>
</tr>
<tr>
<td>Perfectionism</td>
<td>63.23</td>
<td>10.89</td>
<td></td>
<td>0.302</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - Freshness</td>
<td>15.98</td>
<td>2.84</td>
<td></td>
<td>0.539</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>2 - intensity</td>
<td>14.26</td>
<td>2.345</td>
<td></td>
<td>-0.074</td>
<td>0.14</td>
<td></td>
</tr>
<tr>
<td>sensation seeking</td>
<td>30.24</td>
<td>4.36</td>
<td></td>
<td>0.31</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Body self-concept</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - physical self-worthiness</td>
<td>14.34</td>
<td>1.565</td>
<td></td>
<td>-0.431</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>2 – Sports Competition</td>
<td>13.35</td>
<td>1.28</td>
<td></td>
<td>-0.10</td>
<td>0.065</td>
<td></td>
</tr>
<tr>
<td>3 - Physical Attractiveness</td>
<td>13.63</td>
<td>0.966</td>
<td></td>
<td>-0.366</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>4 - Physical Strength</td>
<td>13.39</td>
<td>1.53</td>
<td></td>
<td>-0.38</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>5 - Physical Conditions</td>
<td>13.05</td>
<td>0.919</td>
<td></td>
<td>-0.04</td>
<td>0.42</td>
<td></td>
</tr>
<tr>
<td>Body self-concept</td>
<td>67.76</td>
<td>4.04</td>
<td></td>
<td>-0.422</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Attitude towards doping</td>
<td>50.09</td>
<td>4.58</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

The results of discriminant analysis showed that in 85.1% of cases, the detection function had successfully predicted the discrimination between bodybuilders with a positive attitude and negative attitude toward doping. The results of discriminant analysis, also, correctly predicted 84.4% of athletes with positive attitude and 85.5% of the athletes with negative attitude toward doping.

Table 2: Summary of results for the success of detection function in prediction of group membership (positive and negative attitudes towards doping)

<table>
<thead>
<tr>
<th>Group</th>
<th>Predicted group membership</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive attitude toward doping</td>
<td>84.4</td>
<td>15.6</td>
</tr>
<tr>
<td>Negative attitudes toward doping</td>
<td>14.5</td>
<td>85.5</td>
</tr>
</tbody>
</table>

The results of discriminant analysis showed that there are significant differences between two groups of bodybuilders with positive attitude and negative attitude towards doping in perfectionism, body self-concept, and sensation seeking. Thus, the overall value of detection function for the bodybuilding athletes with positive attitude and negative attitude toward doping was different ($x^2=320.872$, df=3, $p=0.001$ and Wilks Lambda = 0.435). In other words, the sensation seeking and perfectionism was more in bodybuilders with positive attitude toward doping and physical self-concept were more in bodybuilders with negative attitude toward doping. The table shows that each of the variables including perfectionism (0.335), sensation seeking (0.362) and physical self-concept (-0.406) have been involved in the detection function. This means that positive attitude toward doping was greater in athletes with high sensation seeking and perfectionism; and negative attitude toward doping was greater in athletes with high physical self-concept.
The purpose of present study was examining the prevalence of energetic drugs use and the role of perfectionism, sensation seeking and physical self-concept in discriminating bodybuilders with positive and negative attitude toward doping. Descriptive statistics, Pearson correlation analysis, and discriminant analysis were used for data analysis. The results showed that there was a positive relationship between personal standards, excessive concern about mistakes, perfectionism and attitudes toward doping. The perfectionism contribution in distinguishing athletes with positive and negative attitudes toward doping was 0.335. In other words, the increase of perfectionism and its two dimensions including personal standards and excessive concerns about errors had led to the increase in the score of attitude toward doping or positive attitude toward doping in bodybuilders. This result is consistent with previous findings (8) and shows that there is relationship between perfectionism and positive attitude toward doping.

In explaining these findings, it can be said that determining personal standards in sport and physical activity and doing exercises based on the dimensions of perfectionism results in the athletes’ concern about possible mistakes; these concerns extend to athletic competitions and impact on success or failure in this competitions. So, they try to have positive attitude toward performance enhancing drugs, especially doping and energetic drugs and most likely use them if they recognize that it is necessary. In other words, because the perfectionist athletes have doubt on their performance and have a lot of cognitive ruminations (Williams and Leffingwell, 1996), therefore, to solve these doubts and to achieve the desired results of the competition, they will have positive attitude toward doping and energetic drugs; this positive attitude probably lead them to use doping for achieving standards of beauty and physical muscles satisfaction. There was a significant and positive correlation between freshness, sensation seeking, and attitude toward doping. The contribution of sensation seeking in distinguishing bodybuilders with positive and negative attitudes toward doping was 0.362. This means that the increase of sensation seeking and its freshness dimension led to the increase of scores of attitude toward doping or positive attitude toward doping. Due to the lack of research in this field, we can say that this result is in line with previous findings (Cadorot et al., 1995; James, 2010) which show the relationship between sensation seeking, drug abuse, alcoholism, drug use, and positive mental experiences about these drugs.

In explaining these findings, it can be said that since sensation seeking is defined as experiencing complicate, fresh, diverse things and willingness to accept physical and social risks related to these experiences (Zakletskkaia et al., 2009), bodybuilders who have high scores on sensation seeking and want to have more physical strength and physical attractiveness use energetic drugs; so, they perceive the positive effects of these drugs and get a positive attitude toward doping and energetic drugs. Due to the short-term effects of these drugs on the body and muscles, they ignore the psychological and physical risks of these drugs and consider their apparent effect. Also, because it has been shown that high sensation seeking is related to the mental, psychological and reinforcement effects of different drugs (Fillmore et al., 2009; Kelly et al., 2009; Kelly and Robbins et al., 2006; Stoops et al., 2007; Chait, 1994; Perkins et al., 2000), so, it lead to bodybuilders’ positive attitudes toward doping and energetic drugs.

There was negative correlation between physical self- worthiness, physical attractiveness, physical strength, physical self-concept and attitudes toward doping. The contribution of physical self-concept in distinguishing athletes with positive and negative attitudes toward doping was 0.406. This means that an increase in physical

### Table 3: Results of ANOVA to compare each of the predictor variables in both athletes with positive and negative attitudes toward doping and the contribution of each variable in the detection function

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>F</th>
<th>1df</th>
<th>2df</th>
<th>p</th>
<th>contribution of each variable in detection function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfectionism</td>
<td>positive attitude</td>
<td>68.38±4.49</td>
<td>56.499</td>
<td>1</td>
<td>387</td>
<td>0.001</td>
<td>0.335</td>
</tr>
<tr>
<td></td>
<td>negative attitude</td>
<td>60.31±6.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sensation seeking</td>
<td>positive attitude</td>
<td>32.45±3.52</td>
<td>65.899</td>
<td>1</td>
<td>387</td>
<td>0.001</td>
<td>0.362</td>
</tr>
<tr>
<td></td>
<td>negative attitude</td>
<td>28.98±4.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>body self-concept</td>
<td>positive attitude</td>
<td>65.52±3.57</td>
<td>82.906</td>
<td>1</td>
<td>387</td>
<td>0.001</td>
<td>-0.406</td>
</tr>
<tr>
<td></td>
<td>negative attitude</td>
<td>69.04±3.72</td>
<td></td>
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</tbody>
</table>

Discussion and Conclusion
self-concept and its dimensions including physical self-worthiness, physical attractiveness, and physical strength has led to the decrease of scores of attitude toward doping - this causes an increase of negative attitude towards doping. Due to the lack of research in this field, it can be said that this result is in line with previous findings (Hartgens and Kuipers, 2004; Laure et al., 2004; Schirlin et al., 2009). Which showed that the use of doping in athletes is associated with variables such as body image and low self-esteem (as a dimension of physical self-concept).

Regarding the relationship between inappropriate physical self-concept and body image dissatisfaction (Kelly, 2004), it can be said that if personal perception of the shape and appearance in bodybuilding athletes are positive, they will properly explain their body and their body image. This will lead them to have a negative attitude toward doping and this negative attitude can act as a deterrent to their use of doping. But if the physical self-concept in these athletes isn’t appropriate and they do not have a good impression of their body, undoubtedly they will have a positive attitude toward doping and will use energetic drugs to achieve the ideal body self-concept.

One of the limitations of this study was the discrimination of athletes with positive and negative attitudes toward doping. The high and low scores on the questionnaire of attitudes to doping and performance enhancement were based on high and low scores in the questionnaire of attitudes toward doping and performance enhancement. It is important because appropriate methods other than the mean score for this classification may make changes to the results of the study. Therefore, considering above limitation, the results of this study provide important and significant information about the role of perfectionism, sensation seeking, and body self-concept in the attitude toward doping and performance enhancement. It is recommended that the important factors influencing the attitudes toward doping be considered. Of course, the need for appropriate training to better explain the negative effects of doping for athletes and body builders is of special importance.

References


