

Defense Mechanisms in Psychological Health and Sport Success of Athletes

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Abstract

Background: Defense mechanisms represent a crucial component of our capacity to maintain emotional homeostasis. The present study is carried out with the purpose of determining the predictability of psychological health and sport success by defense mechanisms used by elite athletes.

Methods: A sample of 385 (285 male and 100 female) elite athletes were chosen in 2014. Participants completed Mental Health Inventory (MHI), Sport Success Scale (SSS) and Defense Style Questionnaire (DSQ). Analysis of the data involved both descriptive and inferential statistics including Pearson correlation and multivariate regression analyses.

Results: The results revealed that there was a significant positive relationship between mature defense mechanisms with psychological wellbeing and sport success. Also, there was a significant negative relationship between neurotic defense mechanisms and immature defense mechanisms with psychological wellbeing and sport success, while the neurotic defense mechanisms were significantly associated with psychological distress. The results of regression analysis showed that psychological wellbeing could be predicted by mature and neurotic defense mechanisms. In addition, sport success could be predicted by immature and neurotic defense mechanisms.

Conclusion: It can be concluded that psychological health components and sport success are influenced by defense mechanisms through self-regulating processes which operate with the aim of reducing cognitive discrepancies and minimizing sudden changes. Therefore, modification of defense mechanisms can improve mental quality of life and sport success in athletes.

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Introduction

Nowadays, attention to mental health of athletes as effective members of community is very important. Mental health along with emotional health can form constructive relationship to cope with the demands of life and stress stimuli. This important psychological structure expresses our

thoughts and feelings, how we interpret situations around us, and how we regulate the physical, social and psychological environments (1).

One of the important challenges of sport science is the recognition of effective factors in the acquisition and preservation of sport success. Sport success, an active

learning process, is obtained as a result of deliberate practice to improve essential skills in order to reach a high level of sport performance (2). In fact, optimal performance in sport would be achieved as a result of combining technical abilities (technical and tactical), physical abilities (strength, speed, etc.) and mental abilities (concentration, confidence, anxiety control, etc.) (3).

There are several factors in order to determine mental health. One of the effective psychological factors which can affect people's information processing system is ego defense mechanisms. This mechanism due to its formation in early childhood can be used as a model of processing later in life. According to the definition, defense mechanisms are automatic regulating processes that act to reduce cognitive dissonance and minimize sudden changes in internal and external reality by influencing the perception of threatening events (4). Defense mechanisms, as the ego unconscious strategies to deal with anxiety, can protect the inadequacy feelings and maintain self-esteem (5).

Freud reported that frequency of using the different defense mechanisms is the main variable to recognize the personality, pathology and the adjustment (6). Andrews et al (7), based on the hierarchical classification of Vaillant about defense mechanisms (8), divided 20 defense mechanisms to three mature, neurotic, and immature defense styles. Mature defense mechanisms are considered as adaptive, normal and efficient exposure methods, while neurotic and immature defense mechanisms are maladaptive and dysfunctional exposure methods (8). In general, defense mechanisms distort perception of emotional consequences.

According to Wells and Matthews, defenses regulate the emotional experiences through the attention shift which prevent the conscious processing of disturbed information (9).

Empirical evidence shows that defense mechanisms can be set according to a hierarchy of adjustment (10). Adaptive defense mechanisms are associated with physical and mental health outcomes (8). Maladaptive defense mechanisms are associated with many negative factors of health such as personality disorders and depression (11). In examining the relationship between the emotional moods, defensive styles and depressive symptoms it was found that people with immature defense style, are prone to show depressive symptoms (12).

Zeigler-Hill et al showed that with increasing immature defense styles, instability of self-esteem is increased, and with increasing mature defense styles, instability of self-esteem is reduced (13). In a meta-analysis study, findings showed that people with depression disorder show a lower score regarding mature defense style. Conversely, a higher score is observed concerning immature and neurotic defense styles (14). Parker et al consider ego defense mechanisms as psychological mechanisms which manage frustrating and stressful emotions. According to this view, ego defense mechanisms are a determinant of emotional regulation (15).

On the other hand, athletes like most people in progressive efforts are under a lot of pressure for optimal performance. Researches have shown that athletes due to the demands of competition, fear of failure, feelings of inadequacy, guilt, loss of control, parental involvement, performance achievement, personal conflicts, the quality / quantity of reward,

rivalry, important relation, social evaluation, media security, dastardly behavior, and even bad luck experience stress (16).

Studies confirm that different types of stress (e.g. mistakes, adversities received from the coach or fans, etc), individual differences in athletes (such as age, experience, anxiety, self-esteem, etc) and the type of sport require different strategies to cope with stress. Thus, failure to deal effectively with sport stress is harmful for athlete's performance and personal satisfaction (17).

Defenses are psychological actions that keep unpleasant emotional content out of consciousness. Unpleasant emotions include anxiety, depression and anger, in which the thought and emotional content of these emotions may be rooted in the early stages of growth to the present, probably based on real life events, imaginations, or a combination of both. In normal people, the emergence of a very strong excitement destroys the mental functions such as thinking, organizing and focusing. In other words, emotions are considered as harmful if they affect the functions of the ego (in particular, thinking, organizing, and concentrating) (18).

Despite the importance of defense mechanisms in coping with stressful situations (19), there are a few studies on the role of defense mechanisms in athletes, and the role of defense mechanisms have been ignored in the field of sports psychology. Nicolas and Jebrane, in an exploratory study on athletes, showed that defense mechanisms are also essential to increase compatibility with sport performance and there is a significant relationship between coping styles and defensive styles (20).

According to the frequent and important challenges of sports life, the importance of defense styles has increased. It seems that defense styles have an important role in psychological health and sport success. Such studies, especially on the defensive styles, will be an attempt to pay attention to simultaneous concepts and structures of dynamic psychology and positive psychology in sport. Therefore, the aim of this research is to investigate the role of predictors of defense mechanisms in psychological health and sport success of athletes. The other aim of this research is to compare psychological health and sport success in male and female athletes.

Method

This descriptive, correlational research was conducted on elite athletes (male and female) from 10 sports, including 4 team sports (football, handball, volleyball, and basketball) and 6 individual sports (track and field, wrestling, weightlifting, wushu, shooting, and canoeing) which were selected based on random sampling in 2014. Inclusion criteria encompassed competitive athletes who had experience in national championships. We used multivariate regression analysis and structural equation modeling concerning sample size. In multivariate regression analysis, the ratio of sample size (observations) to independent variables should not be less than 5. In this regard, 385 (285 men and 100 women) elite athletes, members of national teams in different disciplines of sports and clubs in the premier league, were selected as sample.

Defense Styles Questionnaire (DSQ)

Defense Styles Questionnaire measures defensive behavior by empirical evaluation of consciousness derivatives of defense mechanisms in everyday life. The new version (DSQ-40) was developed by Andrews et al (7) which contains 40 items, and twenty defense mechanisms are evaluated in three levels, mature (sublimation, anticipation, humor), immature (rationalization, projection, denial) and neurotic (reaction formation) (7).

This questionnaire was reviewed by HeidariNasab et al in Iran (21). Construct validity of the questionnaire was evaluated based on the correlation of each item with the mechanism and associated style. Reliability of defensive styles questionnaire was obtained through test-retest and Cronbach's alpha was performed. The highest total alpha was observed in male students (0.81) and the lowest total alpha was observed in female students (0.69). In the defense styles, the highest alpha was related to immature style (0.72) and the lowest alpha was related to neurotic style (0.50).

The factors of the scale had a good internal consistency (range of Cronbach's alpha 0.76 to 0.79) and test-retest correlation coefficients were 0.61 to 0.79. The scoring was based on 9-point Likert scales.

Mental Health Inventory (MHI)

Mental Health Inventory (MHI) developed by Witt and Weir (22), has 38 items which measures psychological well-being and psychological distress on a 6-point Likert scale (1 low to 6 high). The internal consistency of this scale for foreign samples concerning psychological distress and psychological well-being was 0.94 and 0.92 respectively. The reliability of the total score was reported to be 0.73 (23).

The questionnaire was translated into Farsi, and the Persian version of the English language was reviewed by two experts. Finally, after several stages of reviewing, changing, and revising, the Persian form of mental health inventory was used in the study. Based on the results of confirmatory factor analysis, two factor structures of mental health (including psychological distress and psychological well-being) had a good fitness. Mental health inventory with 31 questions, after removing seven questions, is an appropriate tool to measure the psychological distress and psychological well-being of athletes and has a satisfactory reliability and validity (24).

Sport Success Scale (SSS)

Sport Success Scale (SSS) of Mousavi and Vaez Mousavi (25) was designed on the basis of general features of performance in learning and sport skills. The SSS evaluates the athlete's success on a 6-point Likert scale (from strongly disagree = 1 to strongly agree = 6). Based on the principal components analysis, a six-factor structure was achieved that included the flow state, attention, technique, sensitivity to error, commitment, and achievement. It explained %67.68 of the variance. Measurement of scale reliability by using internal consistency (0.89) and test-retest at intervals of 21 days (0.90) showed that SSS had appropriate reliability coefficients (25).

Results

We used Pearson correlation and multivariate regression analyses for data analysis. Data were analyzed using SPSS version 17. Table 1 shows demographic characteristics of athletes based on the age, gender and history of sports

activities. Table 2 depicts descriptive indicators of mental health components and defense mechanisms.

Table 1. Demographic characteristics of athletes based on age, gender and history of sports activities

Gender	Sports	Frequency	Percent	Sports experience (year)		Age (year)	
				M	S	M	S
Male	Team	140	36.36	10.11	3.24	23.60	2.23
	Individual	145	37.66	8.89	2.34	22.70	3.22
Female	Team	57	14.80	7.70	2.54	22.80	2.98
	Individual	43	11.16	6.78	3.54	23.90	3.12
Total		385	100	8.37	3.11	23.25	3.11

Table 2. Descriptive indicators of mental health components and defense mechanisms

Variables	M	SD	Minimum	Maximum
Psychological distress	53.48	15.45	21	100
Psychological well-being	48.30	7.60	30	66
Sport success	148.43	12.69	103	174
Mature defense mechanism	51.81	8.18	19	72
Immature defense mechanisms	101.68	26.11	48	211
Neurotic defense mechanisms	37.25	9.21	14	68

Based on the results of the Pearson correlation test (Table 3), immature and neurotic defenses had a negative correlation with well-being and sport success. Also, mature defense had a positive correlation with psychological well-

being and sport success. Neurotic defense mechanisms positively correlated with psychological distress, and mature defense mechanism negatively correlated with psychological distress.

Table 3. Pearson correlation coefficient between defense styles and mental health subscales

Variables	Psychological distress	Psychological well-being	Sport success
Immature defense mechanisms	0.035	-0.18*	-0.55
Neurotic defense mechanisms	0.15*	-0.68**	-0.78
Mature defense mechanism	-0.033	0.31**	0.13

P<0/01** P<0/05*

In the next step, to determine the contribution of changes related to each criterion variables, we used stepwise multiple regression analysis. To examine the independence of errors in all equations, the initial presuppositions of regression model were analyzed. Indicators of collinearity tolerance

coefficients (0.7 to 1) and variance tolerance factor (1 to 1.29) showed that there was not collinearity between the predictive variables and the results of the regression model were reliable. In addition, to examine the normality of the distribution, the Kolmogorov-Smirnov test was used.

Table 4. Results of stepwise regression analysis

critierion variable	Step	Predictor variables	R	R Square	F	B	Beta	t
Psychological well-being	First	Neurotic defense mechanisms	0.61	0.41	98.29*	-0.75	-0.68	-5.02 **
	Second	Neurotic defense mechanisms Mature defense mechanism	0.68	0.45	31.01*	-0.58 0.27	-0.57 0.27	-4.08* 2.02 *

P<0/01** P<0/05*

According to the results presented in table 4, based on the coefficients in the first step of analysis, neurotic defense mechanisms explained %41 of variance of the criteria variables (psychological well-being) (P<0.05). In the second step of analysis, by adding the mature defense mechanisms,

the power of predicting increased to %45 which was significant (P<0.05). In general, mature and neurotic defense mechanisms predicted %45 of the psychological well-being variance.

Table 5. Results of stepwise regression analysis

criteria variable	Step	Predictor variables	R	R Square	F	B	Beta	t
Sport success	First	Neurotic defense mechanisms	0.68	0.43	87.29*	-0.89	-0.78	-5.72**
	Second	Neurotic defense mechanisms	0.71	0.49	41.01*	-0.69	-0.51	-4.82*
		Immature defense mechanism				-0.59	-0.48	-4.82*

$P < 0/01^{**}$, $P < 0/05^{*}$

According to the results of table 5, based on the determination coefficient in the first step of analysis, neurotic defense mechanisms explained 43% of variance of the criteria variable (sport success) ($P < 0.05$). In the second step of analysis, by adding the immature defense mechanisms, the power of predicting increased to %49 which was significant ($P < 0/05$). In general, neurotic and immature defense mechanisms predicted %49 of the sport success variance.

Discussion

Based on the results, we observed a significant correlation between defense mechanisms and psychological well-being. Also, a significant correlation was observed between neurotic defense mechanisms and psychological distress, but the correlation between immature and mature defense mechanism with psychological distress was not significant. Regression analysis also showed that neurotic and mature defense mechanism can predict psychological well-being of athletes. These results are consistent with findings of previous studies (8, 12, 14) that have been done in non-sporting samples.

These studies have shown that using defense mechanisms can predict the physical and mental health (26) and people with depression disorder have more neurotic, and immature defense mechanisms (14). People with high levels

of public health and low state-trait anxiety score have mature defense mechanisms (27).

Findings show that if a person uses less immature and neurotic defense mechanisms, the resultant would be more psychological well-being. According to Vaillant (26), without proper processing, emotion-cognition interactions, will not create optimal performance. Consequently, the possibility of using immature mechanisms in stressful situations can increase and threaten a person's psychological well-being.

Other findings were about the negative predictor role of neurotic defenses in psychological well-being in athletes. If an athlete uses inappropriate defenses, then conditions such as depression, anxiety and psychological distress can occur. Because neurotic defenses are maladaptive strategies which cope with anxiety caused by latent and suppressed desires. In other words, neurotic defenses are required to ignore the direct satisfaction of our instinctive needs to facilitate the needs of others and pretend with exaggeration the sense of altruism towards others. So, it seems that by increasing the use of neurotic defenses, understanding and controlling the emotions are reduced. Thus, motivation for sport success is declined and being in this vicious cycle can result in losing the sense of well-being and happiness in athletes.

The results indicate that most mature defense mechanisms can predict the psychological well-being. Since the psychological well-being is defined as happiness, life

satisfaction, personal growth, and represents one of the most important aspects of psychological function (28). Therefore, defense mechanisms can be effective in increasing the efficiency level of it. Accordingly, we can state that professional athletes with a high competitive level through targeted activities and proper use of defense mechanisms can improve their psychological well-being. Because when someone has a passion and motivation for doing sport activities on a regular basis, it is likely to have positive emotional experiences (29).

Another explanation for the role of defense mechanisms on mental health of athletes is that defense mechanisms can make a mental time out with the self-Image of individuals and also can reduce the conflicts (29). In fact, defense mechanisms recognized as psychological or adaptive mechanisms (29), by emotion regulation (15) can improve psychological well-being of athletes.

According to another study, perceived stress of athletes significantly and positively correlated with the negative emotions (anger, anxiety, and depression), but it negatively correlated with one of the positive emotions (happiness). Happiness and excitement correlated positively with subjective performance (30). Nicholls and Levy (31) found that elite athletes experienced both pleasant and unpleasant emotions. The athletes reported both excitement and anxiety several times. Perhaps successful coping facilitates enjoyment, which in turn generates positively toned emotions (31).

Other findings showed that there was a positive correlation between mature defense mechanisms and sport success and there was a negative correlation between immature and neurotic defense mechanisms with sport

success. Regression analysis showed that neurotic and immature defense mechanisms can predict the sport success of athletes. This result is in line with the research of Nicholas and Jebran which showed that athletes with high performance level in comparison to athletes with low performance level used more mature defensive styles (20). According to this account, reducing the use of neurotic defense mechanisms, especially in difficult and stressful conditions of competition, can help the athletes to increase their success chances by confident and positive adaptation with negative experiences of competition. Thereby, reducing the use of neurotic defense style helps athletes to control the feelings of depression, anxiety, fatigue and manage the race conditions, and have positive evaluation of the competition conditions. Reducing psychological distress in athletes, in a positive interaction cycle, improves the power of athletes in managing the competition and reduces the negative thoughts and emotions. The experience of satisfaction concerning sport performance helps athletes to focus and pay attention to performing the sport skills and enhance their probability of success.

Overall, achieving a new level of balance and positive growth as one of the consequences of mature defense mechanisms, which conform to the mental health indicators, can explain the relationship between mature defenses with psychological well-being of athletes. In contrast, maladaptive defenses prevent athletes to see the challenges. Sports psychologists, by identifying these defenses, can help athletes to increase their consciousness for the change. Creating consciousness needs to increase awareness about defenses that keeps athlete vigilant about recognizing the problem. In order to increase sport performance, it is

suggested to improve the psychological well-being of athletes by managing the defense mechanisms. Athletes with learning the psychological mechanisms achieve satisfaction with instinctive behavior for themselves and their social environment.

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