

The Correlation Between Football Referees' Amount of Stress and Their Performance

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Abstract

Purpose: This research paper is aimed to find out the relation between football referees' amount of stress and their Performance.

Materials and Methods: The population is the working professional referees in super league and first league of Iranian football. They are 90 (N=90) people who work in 2012-2013 season and 30 (n=30) of them are sampled randomly for the study. Brums or Pums questionnaires were used in this study, the referees' saliva was sampled at two levels: first, before starting the match, finally immediately after the match. The sampling was done for three matches for per referee and the samples were sent to the lab for analyzing. The calculations were done using Pearson's correlation coefficient and Statistical Package for the Social Sciences (SPSS Inc., version 18.0) was used for the analyses. (P#0.05) were considered statistically significant.

Results: Results showed that there is a significant negative correlation between referees' stress and performance. That is the referees' levels of stress had an impact on how they judged.

Keywords: Football, Performance, Stress, Football referees.

Introduction

In recent century "stress" is one of the most important fields of research in different disciplines. This subject has drawn attention of many including medical practitioners, psychologists, physiologists, biologists, sociologists as well as common public. In recent decades, the term "stress" is applied to a stimulus that can create a change in cognition behavior, emotion and physiology of an individual (Davidson and Neal, 1990).

According to Jaellilne Jaffe (2005), there are four main types of stress that an individual may experience. First, stress which is a type of short term stress that provides immediate strength. Eustress arises at points of increased physical activity, enthusiasm, and creativity. Eustress is a positive stress that arises when motivation and inspiration are needed. On the contrary the second type of stress, that is to say distress is a negative stress brought about by constant readjustments or alteration in a routine. Distress creates feelings or discomfort and unfamiliarity. There are two types of distress; acute stress is an intense stress which arrives and disappears quickly, whereas chronic stress is a prolonged stress that exists for weeks, months, or even years. Third kind of stress is hyperstress which occurs when an individual is pushed beyond what he or she can handle. Hyperstress results from being overloaded or overworked. Finally, hypostress which is the opposite of hyperstress occurs when an individual is bored or unchallenged.

Stress can affect almost every aspect of an individual's life including physical changes, psychological changes, sleep disturbances, and sexual dysfunction. Stress often brings feeling of helplessness and anxiety which definitely affect memory, concentration and learning. Physical symptoms that may be caused or exacerbated by stress include; headache problems, heart disease, tunnel vision/muffled hearings, cold or flu-like symptoms, stroke, cancer, susceptibility to infections, immune disorders, gastrointestinal problems, eating problems, diabetes, and muscular and joint pains. Moreover, psychological changes and signs of mental stress

are difficulty in communicating thoughts, difficulty in sleeping, low threshold of frustration, excessive use of drug/alcohol, limited attention span, poor work performance, difficulty in concentrating, reluctance to leave home, depression, anger, insomnia, restlessness, hyperactivity, sadness, feeling of hopelessness, mood-swings and easy bouts of crying, overwhelming guilt and self-doubt, and finally fear of crowds, strangers, or being alone. Rochford (2005) states that reaction to stress may be so severe where an individual develops Post Traumatic Stress Disorder (PTSD).

PTSD is a psychological condition that can result from experiencing in an overwhelmingly traumatic (frightening) event. Recent researches show that the inability to adapt situations may be associated with the onset of depression and anxiety. The symptoms of stress overlap with the symptoms of depression and anxiety. The tensions of unresolved stress frequently cause insomnia, generally keeping the stressed individual from falling asleep, or causing him/her to awaken in the middle of the night or early morning. Stress can cause sexual dysfunction in both men and women. Stress can lead to a decreased sexual desire and difficulty achieving orgasm in women. Research shows that stress has significant effects on one's memory. Stress can cause a loss of concentration, memory, and therefore, learning. Acute stress can hinder short-term memory, while chronic stress can affect long-term memory. In fact, this may be true for the referees of football in Iran.

In competitive sport situations, some factors such as the importance of sport events, individual factors like trait anxiety, self-believe and self-sufficient of the concerned person may cause stress (Brewer et al, 2005). Football is the most popular sports having many fans all over the world where millions of people enjoy it, and people play football throughout the world visit football matches, watch football games on TV and discuss them with friends in public and read updated football news. The games of elite football groups attract thousands of people. Football has always maintained a foothold in the fans' enthusiasm (Popularity of football, 2011). Football has become one of the most attractive, popular and beautiful events in the world. Referee's role, is a basic role in a match, the referees and assistant referees are involved in a competitive match. In each football competition, two teams are involved. Referees' function is to control the game in implementing rules and regulations. To do so, they must be physically fit and mentally alert. They must have balanced personality to tackle all situations.

Since the outcome of all the players and coach's efforts is dependent on the referees' decisions in the match. When they see an accident, they should consider the role about that and based on the situation and justice, they should make a decision. So their physical and mental readiness, as well as their personal traits and the level of their stress and anxiety are the very important and effective factors in their judgments. Not many studies have been done on referees, so it seems that a comprehensive study to assess the relation between the level of stress and their performance can be necessary, so that the referees can develop well domestic and international fields. In this study, the level of stress in referees before the match and its relation with their performance has been investigated. We hope that referees of various sports, medical research centers, medical research foundation, and psychologists can be benefited from this research.

Many reports indicate that along with footballers and coaches, the referees are sometimes victimized of related stress which may affect any judgment given by them during a competitive match. Such a situation may damage the total environment of the match. In fact, analysis of stress mediated hormone especially for referees on football is meager. Thus, this research is the need of the day. According to Duncko et al (2006), in response to mental stress or anxiety and in addition to increase of epinephrine and nor epinephrine the amount of blood Cortisol increases too. The most upper effect of nor epinephrine increases heart beat and blood pressure and this blood pressure cause to involve heart and its dangerous diseases.

Marsh et al (2006) performed a research on anxiety and runners' Cortisol level. Here the runner runs about 4-5 minutes with intensity 70-80 percent on the treadmill and at the end of test their Cortisol level was lower. So it was concluded that Cortisol amount depends on intensity and exercise condition. Passelergue et al (1997) interpreted the saliva Cortisol levels of 15 wrestlers during competitions, rest, and recovering times. The result showed that the Cortisol levels in athletes who exercise 12 to 15 hours a week is much higher than non-athletic people in the afternoons. Cortisol levels were much higher than expected right after the competition. But after 2 or 3 hours after the competition it goes back to the base amounts. Cortisol levels cannot be the reason of tiredness after competitions except something like marathon.

Mirjamali et al (2012) studied of Sources of Stress in International and National Referees of Soccer, Volleyball, Basketball and Handball in Iran. The comparison of stressful factors between national and international referees showed that the international referees scored higher than national referees only in personal and technical performance.

Objectives of the study

- To determine Performance of football referees.
- To determine the relationship between referees' amount of stress and their Performance.

Question of study

Is there a relationship between referees' amount of stress and their Performance?

Materials and Methods

The present research is a kind of correlations as well as the descriptive research and semi-empirical Research.

Population and Sample

Professional referees and assistant referees of football who are involved in the premiere and first soccer leagues in Iran. Almost are 90 (N=90) in the year of 2012-2013. From this population were selected 30 (n=30) persons randomly, Each referee tested based on cortisol in 3 competitions and their averages were used to identify the stress.

Variables and Tools

The variables of this study were: stress hormone, performance, psychological tests related to stress. Hormonal analysis for cortisol was done from saliva using related biochemical kits, Performance was done by Assessor's mark, Psychological reaction to stress measured by BRUMS (POMS-A) questionnaire, The amount of cortisol were measured by laboratory kit RADIM Made in Germany used by immunoassay method.

Variables	Tools
Stress	Questionnaire + Cortisol
Cortisol	Saliva
Performance	Assessor report

Procedure

The researcher and his assistants attended the site an hour before the competition and after taking saliva by putting a little cotton under tongue of referees, they were sent to the lab for analysis of cortisol. This was done 2 times after 3 competitions for each referee. 1 time before start the match, 1 time after the match to determine the amount of stress during the play time, further the performance of referees evaluated by the mark of assessors. The stress questionnaires were distributed among the judges on the match day, which after filling were refunded.

Statistical methods

Pearson's correlation coefficient was employed to establish relationship between the variables, The Statistical Package for the Social Sciences (SPSS Inc., version 18.0) was used for the analyses. (P#0.05) were considered statistically significant.

Results

To investigate this hypothesis, it is necessary to examine the normality of amount of stress and performance of referees.

Table 1: One-Sample Kolmogorov-Smirnov Test

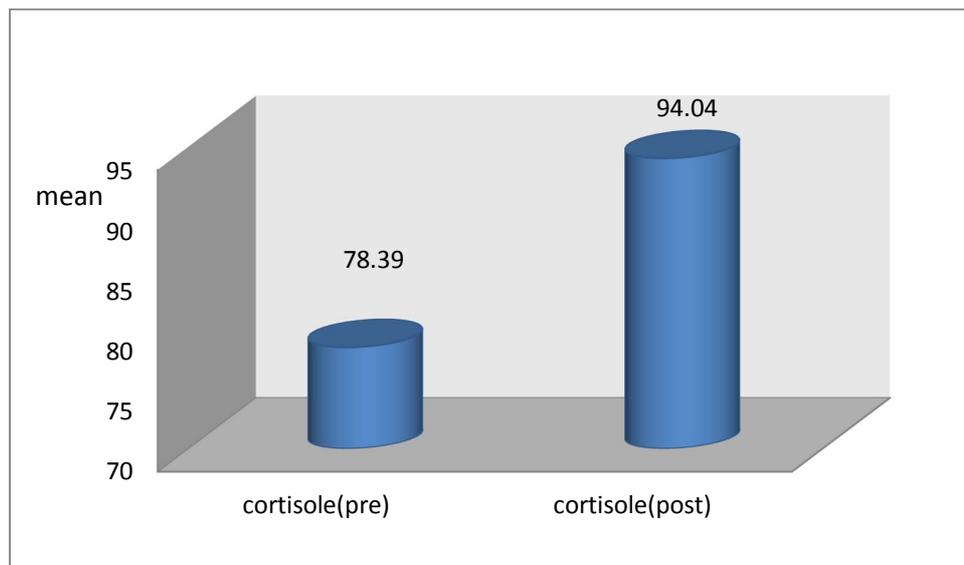
Statics indicators	Kolmogorov-Smirnov's statistic	Asymp. Sig. (2-tailed)
Referees' amount of stress	0.521	0.949
Performance of referees	0.672	0.757

According to the above table, the result of K.S test signifies that variables are normally distributed since the level of significance for these variables is more than $\alpha= 0.05$. Moreover, according to the normality of variables, Pearson's correlation coefficient was used to examine this hypothesis.

Table 2: The relationship between assessor’s marks and referees’ amount of stress

Stress (c+ques) (mean±Std)	assessor's mark (mean±Std)	Pearson Correlation	Sig. (2-tailed)
208.75±27.33	7.99±0.733	-0.585	0.017

Null hypothesis (H_0) does not show a significant relationship between variables, but the contrary hypothesis (H_1) confirms a significant relationship between variable. With regards to the above table, since the level of the significant is lower than 0.05 and the negative Pearson correlation coefficient as well, there is a significant negative correlation between the amount of stress and the performance of football referees. In other words, the increase in amount of stress will decrease the performance of the referees. Pretest and posttest cortisol changes of football referees



Graph represents the pretest and posttest cortisol changes of the football referees. It reveals that amount of cortisol has increased from 78.39 (ml) to 94.04 (ml).

Discussion and Conclusion

The main aim or objective of this investigation is to find out the relation between football referees’ amount of stress and their Performance of Professional Referees in Football Competitions. The Secondary objectives are:

- To determine Performance of football referees.
- To assay the amount of stress the football referees suffer during of competitions.
- The present study is a correlation study. This study is carried out on professional Iranian football referees. The population is the working professional referees in super league and first league of Iranian football. They are 90 (N=90) people who work in 2012-2013 season and 30 (n=30) of them are sampled randomly for the study.
- Brums or Pums questionnaires were used in this study; these questionnaires are to study the moods of athletes. The questionnaire contains 24 questions, 4 of them are about confusion: 4 questions about depression, 4 about fatigue, 4 about tension and 4 of them are about vitality. Then the saliva samples of the referees were tested to identify the cortisol level. The match supervisor also gave a score to the referee’s performance in that match. The questionnaires were answered in the day of the match and at the time of the referees’ rest.
- The referees’ saliva was sampled at two levels: first, before starting the match, finally immediately after the match. The sampling was done for three matches for per referee and the samples were sent to the lab for analyzing. The calculations were done using Pearson's correlation coefficient and SPSS software, and the following results were obtained:
- According to the results of the study, there is a meaningful correlation between the referees’ stress level and their performance (supervisor’s score).

Pearson's correlation coefficient was done to identify the correlation between the referees’ amount of stress and their Performance, and according to the results there is a meaningful correlation between the supervisor’s

score (to the referees' performance) and the referees' stress level. According to these findings, there is a significant negative correlation between the amount of stress and the performance of football referees or In other words, the increase in amount of stress, performance of the referees is decreased. These findings are partly in agreement with those Nishitani and Sakakibara (2007), Passelergue et al (1995), krane (1993). Cortisol is one of the most important hormones and a good index for the stress level. This hormone is released from the adrenal cortex in response to mental and physical pressures. It enhances the effects of catalomenes. Increasing the blood sugar level, aiding the fats lease in the tissues, leasing the proteins, stimulating gluconeogenesis and reducing the glucose usage by the peripheral tissues are among the other effects of this hormone (Vaez Mousavi et al., 1988).

Gabriel et al (1995) in their research on changes in hormones in overuse showed that a rise and fall in concentration of hormones was seen first in cortisol and next in testosterone hormones. Increase in the amount of cortisol hormone may be caused by hyper active hypothalamus-pituitary-adrenal axis. Based on results of previous researches and those of the current research, it seems cortisol hormone changes by physical and psychological pressures and these changes eventually will lead to chronic cortisol concentration¹. Hard physical activity is one of the most important stimulates for releasing cortisol and the amount and intensity of the activities as well as the person's diet control the changes of this hormone level. Different mechanisms are used to explain the cortisol release in response to physical activities.

One of these mechanisms is stimulating the hypothalamus-pituitary-adrenal and as a result increasing the hormone release from the anterior pituitary. Activation of this axis results in cortisol and ACTH release. During physical activities cortisol concentration increases based on the type of activity, intensity of the activity, its duration, and the level of decrease in blood sugar, among them the intensity and duration of the activity are the greatly effective factors on the hypothalamus-pituitary-adrenal axis. The intensity of the activity should be near the cortisol stimulation threshold. This threshold is really close to anaerobic threshold like Lactate accumulation and drop of PH and hypoxia from the hypothalamus-pituitary-adrenal axis (Vaez Mousavi et al., 1988).

In this study referees' stress and performance was studied and a meaningful negative relation was proved between referees' stress and performance. That is the referees' levels of stress had an impact on how they judged. That is the higher their stress is, the lower performance they have; and vice versa. This may be due to effect of stress on referees' decision making and distraction from analysis of slippery scenes of incidents and hasty decision.

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