

A survey on the significance of psychological and psychiatric assessment among qualified African football referees

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Purpose

The present study was carried out to investigate why psychiatric and psychological examinations are neglected during periodical medical examinations for football referees.

Patients and methods

A total of 42 certified male referees were randomly selected from the Sports Medicine Specialized Center situated at Nasr City, Cairo Governorate, Egypt. All participants were registered at the African Confederation of Football. Male adult referees with ages ranging from 29 to 43 years were included in the study. Questionnaires related to the demographic personal characteristics, anxiety, physical health, stress, burnout, and depression were filled out by the participants.

Results

The mean age of the participants was 40 ± 3.35 years. Of the participants, 34 were unmarried and eight were married; 32 participants did not have children and 10 did. A total of 36 participants had received higher education and six received only high school education. Participants were under moderate training schedules of 5 sessions/week of 1½–2 h each and had moderate years of experience (30–50 matches/year). With regard to the Burnout Anxiety Inventory, 63.3% of the participating referees showed no signs of anxiety, 18.4% were at borderline, 15.9% showed mild signs, and 1% presented with moderate records. With regard to the mind over mood depression scores, 35 participants showed no signs, whereas only two showed low signs. The Beck Depression Inventory scores of all participants was in the range of 0–7, that is, they had normal levels of depression. The physical wellness scores of 31 participants were recorded as excellent, whereas five recorded only average scores. With respect to the life stress scores, 67% of participants had normal life stress scores compared with 33% who were more prone to suffer or experience illnesses or accidents from life stress incidents. The Burnout Inventory scale revealed that 47.05% of participants had little signs and 52.95% showed low signs of burnout, with none being at risk. The Maslach results were also in concordance, according to which only one referee suffered from a burnout.

Conclusion

Thus, it may be deduced that, although the present levels of burnout may not be high, there is always potential for it to increase. Thus, programs on burnout are suggested to be included in training courses for referees to prevent the start of symptoms. It is therefore recommended that physical checkup be supplemented with psychiatric and psychological examinations in the periodical assessments of physical health for football referees.

Keywords:

African Confederation of Football, anxiety, burnout, depression, football referees, stress

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Introduction

Depression is a common mental psychological disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration (WHO, 2011). Burnout, in contrast, has been defined as a reaction to chronic stress that involves negative interactions between the environment and personal characteristics

(Smith, 1986; Dalea and Weinberga, 1990). These problems together with stress can become chronic or recurrent and can substantially impair an individual's ability to take care of his or her everyday responsibilities. High levels of perceived stress and burnout have been reported in a variety of service professions, including among social workers, physicians, psychologists, police officers, lawyers, and counselors (Taylora, 1992). As stress

and burnout are constructs that can have a negative influence on those working in human service or helping professions, the importance of managing stress has been firmly emphasized by the medical community.

The theoretical framework proposed by Smith (1986) asserts that personal and situational characteristics influence the perception of stress, and, in turn, perception of stress influences the level of burnout.

The problem has been extensively studied in athletic trainers (Capel, 1986; Hendrix *et al.*, 2000). The higher frequency and intensity of burnout was associated with role conflict, role ambiguity, a greater number of athletes to care for, a decreased resource base, and a greater number of hours needed to provide for the athletes. Athletic trainers are exposed to a unique set of stressors, similar to health service professionals. These stressors can include high athlete-to-athletic-trainer ratio, minimal financial support, and dual-role responsibilities such as head athletic trainer and curriculum director or clinical instructor. Other stressors that athletic trainers experience are associated with relationships with athletes, parents, coaches, administrators, and physicians. These factors can lead to high stress levels, which in turn can influence burnout (Burke and Greenglass, 1989).

Several factors are considered responsible for stress and depression disorder. A number of investigators have examined the sources of stress and consequently depression among sport referees. These sources were fear of failure, fear of physical harm, interpersonal conflicts, time pressure, and peer conflicts, and these fears have emerged consistently among soccer, volleyball, football, and baseball officials (Taylora and Daniel, 1987; Goldsmith and Williams, 1992). Again, a significant correlation between sources of stress scores and burnout scores among soccer referees was recorded (Taylor *et al.*, 1990).

Sport referees have a challenging job because of the many aspects of a game/match that they must take into account, the speed and complexity of the decisions they must make, the repercussions of their actions, the number of people involved in the match, and often the hostile nature of spectators at the sports event (Guillén and Feltz, 2011). Thus, the complexity of the job makes it easy to commit mistakes for which they are often criticized (Anderson and Pierce, 2009), usually by the sports media (Guillen, 2006).

Referee efficacy beliefs are hypothesized to be influenced by mastery of the game, knowledge/education of the referee, support from significant others, physical/mental preparedness, environmental comfort, and perceived anxiety. Accordingly, these beliefs may influence referee performance, referee stress, athlete rule violations, athlete satisfaction, and coreferee satisfaction (Guillén and Feltz, 2011).

The officiating task of referees and the possible mistakes inherent in their job can lead to loss of confidence, high anxiety, and increased stress levels in referees; it has been found that anxiety levels and their causes are similar across different sports (e.g. soccer, basketball, volleyball) (Taylora and Daniel, 1987; Anshela and Weinberg, 1995).

Referees are expected to be more accurate in their decisions, more effective in their performance, more committed to their profession, to have more respect from coaches, administrators, and other officials, and be able to avoid the stress that officiating generates. They need to be physically prepared to handle the physical requirements of the sport they officiate and be able to combat the psychological stressors associated with this unique position.

For many decades sports have played significant roles in the everyday lives of individuals. Sports may include either individual or group games for athletes. In both cases highly qualified coaches, referees, officials, and others are required for excellent performance. Much attention has been paid to their physical endurance and wellness, whereas psychological factors have been ignored.

During the last decade, sports psychiatry was not an issue of concern during physical checkup in sports, whether for athletes, coaches, or referees. The only examination considered vital was that of the heart and chest to avoid exhaustion during the match. Ear, nose, throat, and eye examinations were performed for their crucial importance in decision making, such as determining penalties, and for far viewing of the match.

The task of football refereeing and the peculiarities of the refereeing task itself require special abilities because of the fact that referees are observed by hundreds and thousands of fans in each match/game and that there are many people – athletes, coaches, managers, fans – trying to exert an influence on each of the referee's decisions. Thus, the complexity of the officiating task itself has led to the design of a new model that necessitates the addition of psychological and psychiatric aspects that play a determining role for the referee.

The particular duties of sports officials in matches necessitates the investigation of the psychological consequences of this unique type of involvement in sports. Officials need to be physically prepared to handle the physical requirements of the sport they officiate and be able to combat the associated psychological stressors.

The present study is an attempt to emphasize the importance of adding a new parameter to the annual regular clinical examination for referees because of its vital importance in deciding the physical fitness of the referee in terms of being able to judge for the full duration of the match and in the case of any extra time. The study compares between different tools used for the identification of burnout, stress, and depression levels among referees in an attempt to decide which model best suits the issue. The study also aimed to explore the utility of different inventories in predicting anxiety, stress, burnout, and depression in certified referees from the African Confederation of Football (CAF).

Participants and methods

In the present study, 42 certified male referees were randomly selected from the Sports Medicine Specialized

Center situated at Nasr City, Cairo Governorate, Egypt. All participants were from the CAF and had refereed a number of local, African, or international football matches. They were submitted to their regular annual checkup for the determination of their physical health status. The tests were for the heart, chest, ear, nose, and throat, and eye. Accordingly, the checkup was undertaken to diagnose any condition that might hinder their ability to referee and also detect endurance for the full duration of any match.

The ages of the participants ranged from 29 to 43 years. The participants comprised male adult referees refereeing in local, African, and international matches in African Football. All participants were men. Most of them were under heavy training schedules of at least 5 days/week. All referees consented to participate in the study. All participants were in comparatively good physical health as shown by their clinical reports.

The study assessment parameters included the following:

- (1) A demographic personal characteristic questionnaire (age, marital status, number of children, educational level, country of residence, nationality, number of refereed matches/year, previous injury, training days and hours).

- (2) Psychometric studies, which included:

Generalized anxiety disorder: This was assessed by

- (a) *Burns Anxiety Inventory:* This is a 33-item test that measures three categories – anxious feelings, anxious thoughts, and physical symptoms (Burns, 1989) – on a four-point scale. A score of 0–4 indicates minimal or no anxiety; 5–10 indicates borderline anxiety; 11–20 indicates mild anxiety; 21–30 indicates moderate anxiety; and 31–50 indicates severe anxiety.

Signs of depression: This was assessed by

- (b) *Mind over Mood Depression Inventory:* This is a 19-item questionnaire assessing four different dimensions of depression in terms of cognitive, behavioral, emotional, and physical symptoms (Greenberger and Padesky, 1995). Cognitive symptoms of depression include self-criticism, hopelessness, suicidal thoughts, concentration difficulties, and overall negativity. Behavioral changes associated with depression include withdrawal from other people, not engaging in as many activities that are enjoyable or pleasurable, and having difficulty 'getting started' with activities. Physical symptoms associated with depression include insomnia, sleeping more or less than usual, exhaustion, eating less or more, and weight changes. The emotional symptoms that accompany depression include feelings of sadness, irritability, anger, guilt, and nervousness.

- (c) *Beck Inventory for Depression* (Beck *et al.*, 1961): This is a 15-item score sheet that measures levels of depression, where a score of 1–10 is considered normal; 11–16 is mild; 17–20 is borderline; 21–30 is moderate; 31–40 is severe; and over 40 is considered extreme.

Physical health: This was assessed by

- (d) *Physical Wellness Inventory:* This is a 14-item questionnaire with a yes or no response. A score of 10 or more (excellent) denotes habits that improve health; 7–9 (average) shows that one is obviously trying but there is room for improvement; 6 or less (below average) signifies that there is room for improvement in one's daily habits (Wisconsin Job Center (2008a).

Stress: Stress was assessed by

- (e) *Life Stress Questionnaire:* This is a 35-item questionnaire with a scoring system. A score of 150 or less is regarded as normal. Scores of 150–250 denote a possibility of experiencing illness and accidents. A score of 250–300 signifies a 50% chance of accidents and illness, whereas a score of 300 or more denotes a 75% chance (Wisconsin Job Center (2008b)).

Burnout: Burnout was assessed by

- (f) *Burnout Self-test:* This is a 15-item score sheet that deals with signs of burnout. A score of 15–18 denotes little sign of burnout; 19–32 denotes low signs of burnout; 33–49 denotes risk; 50–59 denotes severe risk; and 60–75 denotes very severe risk (mind tools).

- (g) *Maslach Burnout Inventory* (Maslach, 1996): The Maslach Burnout Inventory is designed to assess the three aspects of burnout – emotional exhaustion (EE), depersonalization (DP), and lack of personal accomplishments (PAs). Each aspect is measured by a separate subscale. Burnout is conceptualized as low, average, or high according to the following ranges: EE – low ≤ 16 , average 17–26, high ≥ 27 ; DP – low ≤ 6 , average 7–12, high ≥ 13 ; PA – low ≥ 39 , average 38–32, high ≤ 31 .

Procedure

Questionnaires were presented to participants during their regular checkup at the Hospital for Medical Sports, Nasr City, Cairo, Egypt, after they had signed a written consent to participate in the study program. They were also assured of confidentiality of responses.

Data were analyzed through descriptive statistics (mean + SD), graphically represented, and discussed in view of the available literature.

Results

Participants ($n = 42$), who were volunteers, were allowed to participate only once in the study, and all of them responded to the first part of the questionnaire – that is, the demographic personal characteristic questionnaire. For the second part only 38 filled out the questionnaire, resulting in a response rate of 96%. Again, two of the 38 responded only to the Burns and Mind over Mood Inventory and left the others unchecked.

Demographic characteristics

Data pertaining to age has been presented in Table 1. The mean age of the participants was 40 ± 3.35 years.

Table 1 Age distribution among studied groups

Age	29	31	33	36	37	38	39	40	41	42	43
N (% distribution)	1 (2.4)	1 (2.4)	4 (9.5)	9 (21.4)	2 (4.8)	5 (11.9)	5 (11.9)	6 (14.3)	1 (2.4)	5 (11.9)	3 (7.1)

Table 2 Percentage of referees who are married, who have children, and who fall under a higher educational level

Responses	Marital status	Children	Higher education
Number of positive response	34	32	36
Number of negative response	8	10	6
%	81	76.2	85.7

With regard to marital status and number of children, 34 participants (81%) were married and eight were either unmarried or divorced (19%) (Table 2). According to the questionnaire, the number of children ranged from 1–5 (total 79/42) with an average of 1.88 (approximately two/person) (Table 2).

The educational level of participants in the present study ranged from university education ($n = 29$) to higher diploma ($n = 7$) or high school education ($n = 6$). The recorded data are presented in Table 2. It was seen that most of the referees had from higher educational levels of BSc or BA, having specialized in different branches of science, engineering, economics (accounting), or law. Two of the referees with university degrees were professors.

All participating candidates were in very good physical condition and wellness. Some ($n = 7$) had suffered from previous injuries that are common among athletes. The recorded previous injuries were hip and lower limb injuries and abdominal muscle injuries.

Participating referees in the study were mostly under moderate training schedules of five or more than five training sessions/week of about 1½–2 h each.

With regard to the years of experience in refereeing matches, presented data were categorized into three grades according to the number of matches refereed/year: grade 1 – less than 30 matches; grade 2 – 30 to 50 matches; and grade 3 – more than 50 matches (Table 3).

According to Table 3, most referees lie in grade 2 of experience – that is, 30–50 matches annually.

Psychological assessments

Several inventories were assessed to measure different disorders.

Anxiety

(a) *Burns Anxiety Inventory*: Scores are tabulated in Table 4 and graphically presented in Fig. 1. Thirty-eight participants filled out the score sheet, whereas four did not respond to this part of the tests. The results show that 63.3% of participating referees revealed no anxiety signs, whereas 18.4% were at borderline. Only 15.9% showed mild signs of anxiety and 1% presented with moderate records (Table 4 and Fig. 1).

Table 3 Experience in refereeing in grades

Grades of experience Number of matches/year	Number of referees (%)
Grade 1 (<30)	12 (31.6)
Grade 2 (30–50)	17 (44.7)
Grade 3 (>50)	9 (23.7)

Depression

(b) *Mind over Mood Depression Inventory*: According to the results, 35 participants showed no signs, whereas two showed low signs and five refused to fill the questionnaire (Table 5 and Fig. 2).

(c) *Beck Depression Inventory*: All scores of the participants were in the range of 0 to 7 – that is, they had normal levels of depression.

Physical health

(d) *Physical Wellness Inventory*: In the present study, 36 candidates responded to the questionnaire and six declined. Thirty-one recorded excellent scores, whereas five recorded only an average score (Table 6 and Fig. 3).

Stress

(e) *Life Stress Questionnaire*: The obtained data tabulated in Table 6 and graphically presented in Fig. 4 show that 67% of participants showed normal life stress scores versus 33% who may suffer or experience illness or accidents from life stress incidents.

Burnout

(f) *Burnout Self-test*: Again, only 34 candidates responded to this questionnaire, whereas eight declined. Recorded scores are presented in Table 7 and graphically given in Fig. 5, where 47.05% of participants recorded little signs and 52.95% low signs of burnout, with none being at risk (Table 8).

(g) *Maslach Burnout Inventory*: Only 35 candidates responded to the questionnaire. One showed a high level of burnout and he was the same referee who had a high level of stressful life events. Five referees had an average level of burnout and 29 showed no signs. Most of them showed high scores in personal achievement and low scores in DP and EE (Table 9).

Discussion

Sports, especially team games, play a vital role in everyday life. Such games create a high pressure environment that focuses on winning and achievement. Burnout and anxiety have become topics of increasing interest to the sports community. When asked what feelings they associate with being burned out, athletes and coaches often cite internal and external sources of pressure,

Table 4 Level of anxiety using Burns Anxiety Inventory in football referees

	Number of referees	Minimal or no anxiety	Anxiety		
			Borderline	Mild	Moderate
Number of cases (%)	38	24 (63.2)	7 (18.4)	6 (15.9)	1 (2.6)

Figure 1

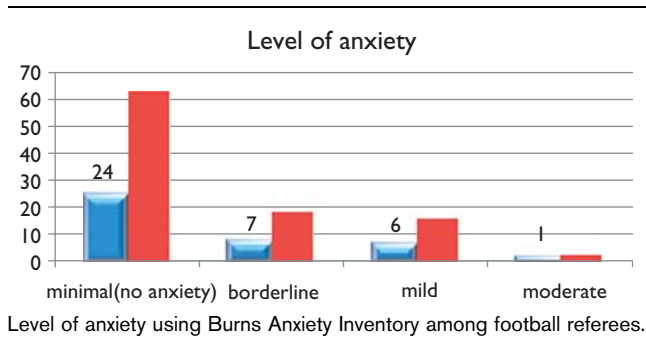


Figure 2

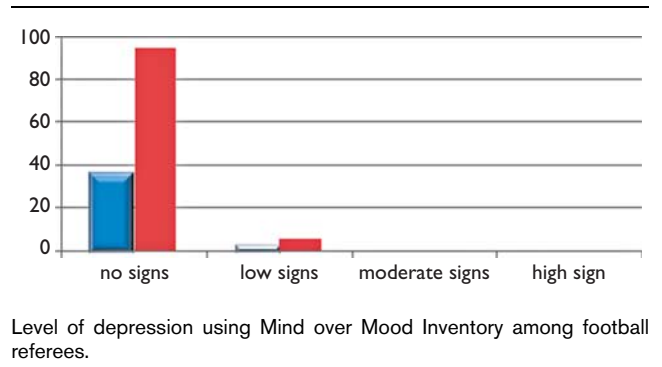


Table 5 Level of depression using Mind Over Mood Inventory in football referees

	Number of referees	No sign	Low sign	Moderate	High
Number of cases (%)	37	35 (94.6)	2 (5.4)	0 (0)	0 (0)

Table 6 Level of physical wellness in football referees

	Number of referees	Excellent	Average	Below average
Positive response (%)	36	31 (86.1)	5 (13.9)	0 (0)

physical and mental exhaustion, mood changes, increased anxiety, and lack of caring (Weinberg and Gould, 2007). In contrast, officials, especially referees, playing a vital role in the success of a game, are more susceptible to mood disorders.

According to Clegg and Thompson (1993), the official is the essential third dimension of an athletic contest, with the players and coaches constituting the first and second, respectively. However, an uneasy relationship tends to exist between game participants and officials as historically they have viewed each other as a source of constant aggravation (Dickson, 2002).

Despite the above-mentioned observations, periodical medical examination of referees include only the heart, chest, and eye (physical health). Psychological and psychiatric health check is completely excluded. Hence, the present study emphasizes the vital importance of including such tests in periodical inspection.

From the 42 volunteer participants joining the study only 38 (96%) responded to the second part of the questionnaire that assessed for depressive disorders. Two of the 38 participants responded to the Burns Anxiety and Mind Over Mood Inventory but declined to fill in those of depression and burnout. Such rejection was mainly due to fear that the study may impact their status as referees despite being assured of confidentiality. Yet another reason was the language barrier as most of them were French and the questionnaire was presented in English.

Figure 3

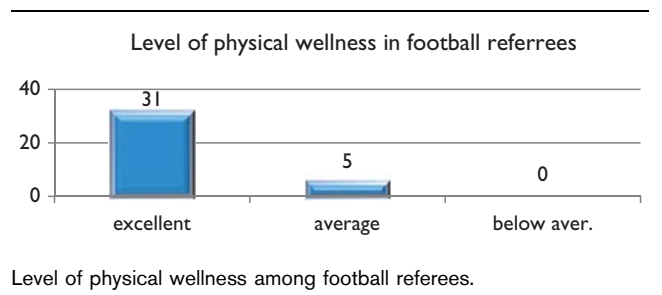
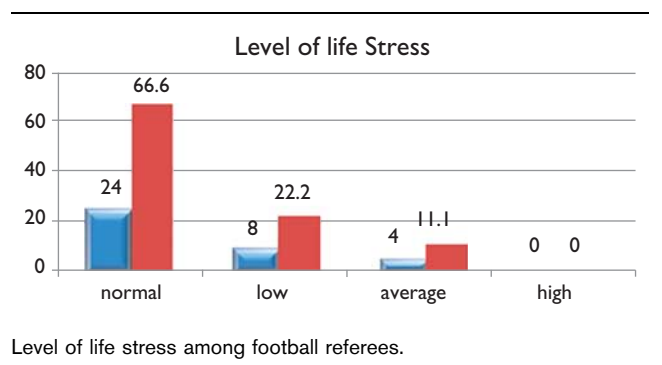


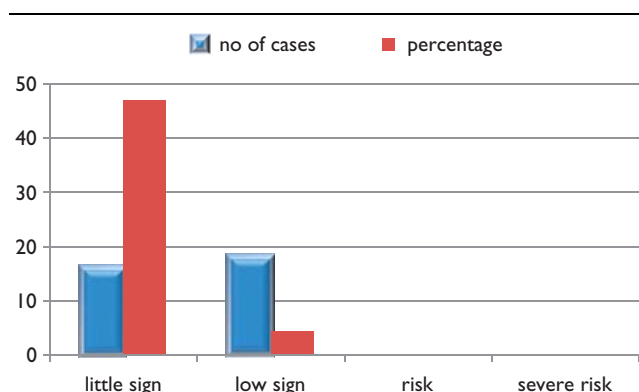
Figure 4



The mean age of the participants was 40 years. Nine were above the mean age and 27 below. Thus, 40 seems to be the optimal age for physical fitness and wellness in general, as well as for proper judgment. Following the same trend, Burke *et al.* (2000) reported young (14–18

Table 7 Level of life stress in football referees

	Number of referees	Normal	Low	Average	High
Number of cases (%)	36	24 (66.7)	8 (22.2)	4 (11.1)	0 (0)

Figure 5

Signs of burnout among football referees.

years) referees to be significantly more stressed than adults (19–46 years) in making a wrong call and administering a technical foul. In their study, stressors that were ranked the lowest included the presence of media, making a mistake in mechanics, verbal abuse by spectators, and arguing with players and coaches. Kaissidis and Anshel (1993) found that young basketball officials were significantly more stressed than older officials.

Another demographic criterion was the marital status: 81% (34) of the participants were married, denoting more stable psychological conditions of stress. Again, concerning the issue of children, 76.2% had children, with an average of two per participant, whereas the rest had none.

Education level was a main topic of the study as it imposes a degree of positive decision-making skills. Accordingly, 83.3% ($n = 35$) of participants were from higher educational backgrounds: 29 with university degrees and seven with higher diploma qualifications. Of the participants with higher educational level, two were university professors. Only six were of only high school educational level.

The participants were in very good physical condition and wellness. A limited number ($n = 7$) reported previous injuries that are common among athletes – namely, hip and lower limb injuries and abdominal muscle injuries. These are considered normal among athletes in general, where lower limbs are mostly used in football; however, other injuries such as head and higher limb may also occur. A referee in most cases has to be of higher physical fitness because of the nature of his job on the field.

The referees participating in the study were mostly under moderate training schedules of five or more than five training sessions/week of about 1½–2 h each.

Most referees were in grade 2 of experience – that is, 30–50 matches annually. Nevertheless, 23.7% (nine

participants) were of grade 3 – that is, more than 50 matches/year. This accounts for the perceived low levels of stress (33%) and burnout (52.95) among participants. The higher number of matches refereed per year exposes them to high levels of stress as they are asked to referee more matches because of the nonavailability of experienced referees for certain critical matches that necessitate higher qualifications and grades of experience. The officials' wealth of experience may help develop coping strategies and adjustments to learn how to effectively cope with anxiety-producing situations Burke *et al.* (2000).

Different inventory tools were used for the assessment of several criteria of anxiety, depression, physical wellness, stress, and burnout. For more concise results, additional tools should be used to enhance the authenticity of the deduced conclusions. Therefore, the Burnout Inventory and the Maslach Burnout Inventory, the Burns Anxiety Inventory, physical wellness and life stress questionnaires were used.

Thirty-eight participants filled out the score sheet for Burns Anxiety Inventory, whereas four handed it empty for this part of the tests. Results show that 63.3% of participating referees revealed no signs of anxiety, whereas 18.4% were at borderline. Only 15.9% showed mild signs of anxiety and 1% presented with moderate records. Present results are concomitant with those of Burke *et al.* (2000) who came to the conclusion that officiating causes only low levels of anxiety or that officials may have effective coping strategies for dealing with anxiety-producing situations. Again, Kaissidis and Anshel (1993) reported that officiating is a unique type of anxiety in that officials almost never have anyone 'cheering' for them. Officiating/umpiring/judging requires objective, impartial judgments.

Results of the Mind Over Mood Inventory revealed that 94.6% of patients showed no signs of depression. Again, all scores for the Beck Depression Inventory were in the range of 0 to 7 – that is, participants showed normal levels of depressive symptoms. Thus, depression is a factor that is nearly conclusively absent in football referees. This might be due to the fact that sports could be a protective factor and they all play sports sufficiently.

In the present study 36 candidates responded to the questionnaire of physical wellness, whereas six declined. Thirty-one recorded excellent scores, whereas five recorded only average scores. In most sports, referees engage in ample physical exercise where they might cover even several kilometers in a game; thus, physical wellness in an essential aspect of consideration for the individual.

Taylor *et al.* (1990) reported that burnout among officials was mostly related to stress from fear of failing, interpersonal conflict, and role of culture conflict. They found a positive correlation between total stress factors and total burnout score.

Table 8 Signs of burnout in football referees

	Number of referees	Little sign	Low sign	risk	Severe risk
Number of cases (%)	34	16 (47.05)	18 (52.95)	0 (0)	0 (0)

Table 9 Maslach Burnout Inventory items

	Emotional exhaustion	Depersonalization	Lack of personal accomplishment
Low	31	30	7
Average	4	4	5
High	None	1	23

The data obtained in the presently for life stress show that 67% of participants had normal life stress scores versus 33% who may suffer or experience illness or accidents from life stress incidents. Also, recorded scores for Burnout Inventory demonstrate that 47.05% of participants recorded little signs and 52.95% recorded low signs of burnout, with none being at any level of risk. Such low levels of stress and burnout may be mainly attributed to the engagement of participants in continuous daily physical training, which makes them less liable to anxiety, depression, and burnout.

These minimal low signs of stress and burnout may be attributed to the fact that referee mistakes can have devastating consequences from an economical and social perspective for clubs and fans, as well as for athletes and teams (Guillen, 2003). Another psychological mechanism that has been shown to mitigate stress and anxiety related to performance is one's sense of self-efficacy (Bandura, 1997), which influences stress and anxiety through one's beliefs about personal control of actions, thoughts, and effect. Those who are confident about their abilities focus on the challenge and what they need to do to accomplish their task and worry less about making mistakes or the pressure of the situation. These results are in agreement with those of Stewart and Ellery (1996) and Rainey and Hardy (1997) that state that officials' perception of stress is low. According to the Maslach burnout most of the referees had a low score on both EE and DP and a high score on the PA scale. This agrees with the results of Hendrix *et al.* (2000) that state that higher perceived stress scores were related to higher EE and DP and lower levels of PA.

The studies performed with sports officials show that officiating, as well as physical illnesses or stress symptoms, causes stress (Rotella *et al.*, 1985, unpublished observation; Zoller, 1985). Taylor and Daniel (1987) have discovered that stress causes officials to become introspective, which in turn worsens their performance because of the lack of a broad external focus on the contest. Similarly, Stewart and Ellery (1996) recorded very little and moderate stress among volleyball officials. Rainey and Winterich (1995) reported that, of the 723 basketball referees studied, only 4% reported high stress. The mean was between a low and moderate stress rating. In contrast, Gilbert *et al.*'s (1995) case study on intramural ice hockey referees discovered that stress was not reported to be problematic. Although referees in the study were married with children and had

jobs and bills to pay, they did not have high levels of stress, which may be because regular sports performance is a protective factor.

Following the same trend, in the study by Gholamian *et al.* (2009), scores for burnout among Iranian super league soccer players was 52.53 and 76.39, respectively, with a significant relationship between their burnout and stress levels. Nevertheless, the present data show far lower levels of stress among CAF football referees, which may be attributed to the difference in social and environmental factors. Stress is emphasized to have a direct negative effect on burnout, whereas burnout appears to have a direct positive effect on perceived stress over time (Taylor *et al.*, 1990).

Conclusion

Although the level of depression, anxiety, and burnout at present may not be high, there can always be the potential for it to increase because of the demand of sports. Dealing with players, spectator comments, trainer judgments, necessity of making quick decisions, firmness, and being alert and attentive all through the game may make them susceptible. Thus, programs in burnout are suggested to be included in training courses for referees in order to prevent initiation of such symptoms. It is recommended that periodical medical examinations for qualified football referees be supplemented with psychological and psychiatric examination to exclude any disorder that may adversely affect his quality of decision making, certainty of ruling, firmness with players, and proper judgment.

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Conflicts of interest

There are no conflicts of interest.

References

- Anderson KJ, Pierce DA (2009). Officiating bias: the effect of foul differential on foul calls in NCAA basketball. *J Sports Sci* 27:687–694.
- Anshela MH, Weinberg RS (1995). Sources of acute stress in American and Australian basketball referees. *J Appl Sport Psychol* 7:11–22.

- Bandura A (1997). *Self-efficacy: the exercise of control*. New York: Freeman.
- Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J (1961). An inventory for measuring depression. *Arch Gen Psychiatry* 4:561–571.
- Burke KL, Joyner AB, Pim A, Czech DR (2000). An exploratory investigation of the perceptions of anxiety among basketball Officials before, during and after the contest. *J Sport Behav* 23:11–19.
- Burke RJ, Greenglass ER (1989). Psychological burnout among men and women in teaching: an examination of the Cherniss model. *Hum Rel* 42:261–273.
- Burns DD (1989). *The feeling good handbook*. New York: A Plume Book/Penguin.
- Capel SA (1986). Psychological and organizational factors related to burnout in athletic trainers. *Res Q Exerc Sport* 57:321–328.
- Clegg R, Thompson WA (1993). *Modern sports officiating a practical guide*. 5th ed. Dubuque, IA: WCB Brown & Benchmark.
- Dalea J, Weinberga R (1990). Burnout in sport: a review and critique. *J Appl Sport Psychol* 2:67–83.
- Dickson S (2002). How good are elite soccer referees? Just ask the players and coaches! In: Spink W, editor. *Science and football IV*. London: Routledge.
- Gholamian J, Golzar S, Hosseini S, Talebpoor M (2009). A survey of refereeing burnout among Iranian soccer super league referees and to study its relationship to stress level. *J Sport Manag* 1:121–157.
- Gilbert WD, Trudel P, Bloom GA (1995). Intramural ice hockey officiating: a case study. *Avante* 1:63–76.
- Goldsmith PA, Williams JM (1992). Perceived stressors for football and volleyball officials from three rating levels. *J Sport Behav* 15:106–118.
- Greenberger D, Padesky C (1995). *Mind over mood: change how you feel by changing the way you think*. 1st ed. New York: The Guilford Press.
- Guillén F, Feltz DL (2011). A conceptual model of referee efficacy. *Front Psychol* 2:25.
- Guillen GF (2003). Current overview of the study of refereeing and sports judging from a psychological approach. In: Guillen GF, editor. *Psicologia del arbitraje y juicio deportivo*. Inde: Barcelona. pp. 7–24.
- Guillen F (2006). *The psychology of refereeing and judging in sports*. In: Garcés de los Fayos E, Olmedilla A, Jara P, editors. *Deporte Y Psicología*. Murcia: DiegoMarin. pp. 667–684.
- Hendrix AE, Acevedo EO, Hebert E (2000). An examination of stress and burnout in certified athletic trainers at Division I-A Universities. *J Athl Train* 35: 139–144.
- Kaissidis A, Anshel MH (1993). Sources of and responses to adult and adolescent Australian basketball referees. *Aust J Sci Med Sports* 26:22–32.
- Maslach C, Hackson SE, Leiter MP (1996). *The Maslach Burnout Inventory (MBI)*. 3rd ed. Palo Alto, CA: Consulting Psychologists Press.
- Rainey DW, Hardy L (1997). Ratings of stress by rugby referees. *Percept Mot Skills* 84 (Part 1): 728–730.
- Rainey D (1995). Sources of stress among baseball and softball umpires. *J Appl Sport Psychol* 7:1–10.
- Smith RE (1986). Toward a cognitive-affective model of athletic burnout. *J Sport Psychol* 8:36–50.
- Stewart MJ, Ellery PJ (1996). Amount of psychological stress reported by high school volleyball officials. *Percept Mot Skills* 85:337–338.
- Taylor AH, Daniel JV, Leith L, Burkec RJ (1990). Perceived stress, psychological burnout and paths to turnover intentions among sport officials. *J Appl Sport Psychol* 2:84–97.
- Taylor A, Daniel JV (1987). Sources of stress in soccer officiating: an empirical study. In: Reilly T, Lees A, Davids K, Murphy WJ, editors. *Science and Football Proceedings of the First World Congress of Science and Football*. London: Liverpool. pp. 538–544.
- Taylor J (1992). Coaches are people too: an applied model of stress management for sports coaches. *J Appl Sport Psychol* 4:27–50.
- Weinberg RS, Gould D (2007). *Foundations of sport and exercise psychology*. 4th ed. Champaign, IL: Human Kinetics.
- WHO (2011). WHO initiative on depression in public health. Available at: http://www.who.int/mental_health/management/depression/depressioninph/en/ 2011.
- Wisconsin Job Center (2008a). *Physical Wellness Questionnaire*. USA: Job center of Wisconsin. Wisconsin Department of Workforce Development.
- Wisconsin Job Center (2008b). *Life stress Questionnaire*. USA: Job center of Wisconsin. Wisconsin Department of Workforce Development.
- Zoller S (1985). Learning how to live with stress. *Referee Mag* 10:48–51.