Injury Occurrence and Psychological Risk Factors in Junior Football Players

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Abstract: Football is a popular sport with a large number of injuries. It is necessary to understand injury risk factors to identify the injury-prone athletes and to develop injury prevention plans. Most studies have addressed physical and biomechanical risk factors but nowadays psychological factors are mentioned as an important risk factor predictor. The aim of the present study was to examine the psychological factors that could increase the injury risk among football players. Eighty one junior male football players (16-20 years old) completed Competitive State Anxiety Inventory (CSAI-2) and previous injury questionnaire. The results of Pearson correlation analysis revealed significant relationships between injury occurrence, cognitive anxiety (p<0.05) and somatic anxiety (p<0.05) but no significant relationship was found with self-confidence (p>0.05).

It can be concluded that cognitive and somatic anxiety may increase the injury occurrence due to poor concentration and physiological changes. The findings support suggestions that psychological factors can be used to predict injury occurrence and anxiety was the predictor of injuries in junior football players.

Key words: Soccer %Sport injury %Psychological predictor factor %Anxiety %Injury risk factor

INTRODUCTION

Football is probably the most popular sport worldwide, with a growing interest and an increasing number of players. It is a contact sport and challenges physical fitness by requiring a variety of skills with different intensities. Nevertheless, football is also associated with a large number of injuries [1]. Hagglund (2007) stated that 65%-95% of Swedish elite male football players encounter at least one injury every year [2]. International football players reported an injury frequency of 9.4 injuries /1000 h of football practice [3].

It is obvious that injuries have a significant impact on individual and team performance [4]. Understanding injury risk factors are essential to identify the injury-prone athletes and to develop injury prevention strategies. As injury causation is usually complex, risk factors must be recognized before interventions are being developed.

Interest in understanding sport injuries has led to the general conclusion that two major factors influence sport injury vulnerability: external factors; for instance, type of sport, weather conditions and player’s position [5] and internal factors; for example, physiological and psychological factors [6].

Most studies have addressed physical and biomechanical risk factors, e.g. abnormal joint kinetics and kinematics [7-9], joint laxity, mechanical or functional instability [10,11], lower extremity strength [11-13], muscular imbalances [12], decreased range of motion [14], previous injuries and inadequate rehabilitation [2,14-16]. Some researchers have suggested that certain athletes, as a result of their personality traits, have a particular tendency towards injury and individuals’ psychological state could be related to the injury occurrence [17-18]. Williams and Andersen (2007) found in a review of 40 empirical studies that 85% of those researches showed a positive relationship between life-event stress and injury risk [19].

Some models try to establish a connection between psychological background and the occurrence of sport injuries. One of the most well known models is Williams and Andersen’s (1998) stress-injury model. The model posits the effects of psychological risk factors on injuries and other sport-related health outcomes. According to this model, injuries are mediated by the cumulative effect of acute and/or chronic physiological stress responses. This model posited that increased autonomic nervous system activation and possible simultaneous behavioral disruptions (e.g. sleep disturbance) resulted from heightened negative affect and may act in synergy with the demands of heavy exercise to increase risk of illness and injury [19]. Negative emotion-linked increase in stress hormones (i.e. cortisol) may widen or prolong susceptibility to injury that is created.
by high-intensity and high-volume training [20]. Williams and Andersen (1998) divided risk factors into three main categories: personality, history of stressors and coping resources. Personality can affect what situations an athlete apprehends as stressful [19].

Other models are the Model of the influence of psychological factors on sports injury by Junge (2000), with three distinct psychological categories including coping resources, psychological stressors and emotional state [21]. Another one is Johnson and Ivarsson’s (2010) empirical model of injury risk factors. This model emphasizes that personality factors, stress and coping influence the injury risk especially among football players [22]. Some other important psychological factors are anxiety (somatic and cognitive) [21] and self-confidence [23] that are derived from Multi-Dimensional Anxiety Theory [24].

Ivarsson and Johnson (2010) suggested four personality trait factors that significantly predicted injury: somatic trait anxiety, psychic trait anxiety, stress susceptibility and trait irritability [25]. However, psychological factors (Inhibition, aggression and risk-taking) did not emerge as predictors in study of Schwabel [26]. Bandura (1997) hypothesized that an athlete with low self-efficacy would also be fearful of the sport environment and consequently lack confidence in attaining a positive outcome (e.g. avoiding injury). Hence, athletes with lower confidence in avoiding injury would be more likely to be injured than those confident in avoiding injury [23]. Short et al. (2004) observed negative relationships between worry/concern and confidence in avoiding injury; also they cleared that injured athletes have lowest confidence in their ability to avoid re-injury [27]. Although the findings of Galambos (2005) supported suggestions that psychological measures have utility in predicting athletic injury, they did not mention anxiety as a predictor factor [28]. Williams and Andersen (1998) found a positive relationship between a sport injury occurrence and competitive trait anxiety [19].

The literature shows that psychological factors seem to have an effect on the risk of soccer injury in adolescents [29]. Steffen et al. (2008) observed a relationship between anxiety and injury in young football player [30]. Johnson and Ivarsson (2010) studied psychological predictors of sport injuries between junior male and female football players studying at football high schools in southwest Sweden. Their results showed that the main factors were life event stress, somatic trait anxiety, mistrust and ineffective coping [22].

Sport injury researches focusing on psychological factors seem to have the potential to discover psychological factors that might lead to increased or decreased risk of injury among athletes and to make recommendations to sport medicine teams and coaches to prevent injuries. The aim of the present study was to examine psychological factors that could increase the injury risk among Iranian junior football players.

**MATERIALS AND METHODS**

**Participants:** Participants were 81 male football players of Tehran Junior Super League Championship (Asia Vision) who were selected by convenience method. The mean age of the sample was 17.95 ± 1.139 years (Range =16-20) and they had 5-9 years of experience in soccer. Those players in national team were excluded from the study.

**Instrument**

**Anxiety:** The Competitive State Anxiety Inventory CSAI-2 was used to measure competitive anxiety [31]. Participants rated their anxiety responses over the multidimensional constructs of cognitive anxiety, somatic anxiety and self-confidence through 27 items with nine items representative of each construct. Symptom intensity levels were rated on a scale ranging from 1 (not at all) to 4 (very much so) leading to intensity scores ranging from 9 to 36 for each anxiety and confidence construct. Validity and reliability of the CSAI-2 in Iranian athletes was reported by Farokhi and Hakak (2000) [32].

**Injury:** Self-reported previous injury questionnaire in various body parts (neck, shoulder, humorous, elbow, forearm, wrist and fingers, hip, femur, knee, calf, ankle and fingers and torso) including fracture, sprain and strain was used for injury occurrence. Participants were asked to report the number of injuries during the last 12 months by completing self-reported previous injury questionnaire following researcher’s explanations [33]. Participants were required to report only those injuries that required medical attention or withdrawal from training for one day or more [34]. Finally, total number of injuries was used in the statistical analysis.

Data normality was examined by K-S test and then Pearson correlation was performed to examine the relationship between anxiety and injury occurrence (p=0.05).

**RESULTS**

The majority of football players reported at least one injury over the previous 12 months (78% of the sample) with an average of 3.03 (SD= 2.73, range =0-11) injuries over the previous 12 months (Table 1).
Table 1: Demographic characteristics of subjects (n = 81)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>17.95</td>
<td>1.13</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>175.3</td>
<td>5.98</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>70.62</td>
<td>7.82</td>
</tr>
<tr>
<td>Injury (in 12 month)</td>
<td>3.03</td>
<td>2.73</td>
</tr>
<tr>
<td>Cognitive Anxiety</td>
<td>22.84</td>
<td>4.9</td>
</tr>
<tr>
<td>Somatic Anxiety</td>
<td>18.86</td>
<td>5.53</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>22.93</td>
<td>3.96</td>
</tr>
</tbody>
</table>

Table 2: Correlation matrix among the study variables (n = 81)

<table>
<thead>
<tr>
<th>Variables</th>
<th>r</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury- Cognitive Anxiety</td>
<td>0.276*</td>
<td>0.01</td>
</tr>
<tr>
<td>Injury- Somatic Anxiety</td>
<td>0.237*</td>
<td>0.03</td>
</tr>
<tr>
<td>Injury-self-confidence</td>
<td>-0.143</td>
<td>0.2</td>
</tr>
</tbody>
</table>

* Correlation is significant at 0.05 (2-tailed).

The Pearson correlation analysis revealed significant relationships between injury occurrence and cognitive anxiety (r=0.27, p=0.01) and somatic anxiety (r=0.23, p=0.03). Relationship between self-confidence and injury occurrence was not significant (r= -0.14, p=0.2) (Table 2).

DISCUSSION

The aim of the present study was to examine the relationship between psychological factors and injury risk among junior football players. Results of Pearson correlation showed a significant relationship between somatic anxiety (r=0.237) and cognitive anxiety (r=0.276) with injury occurrence but self-confidence had no significant association with injury occurrence (r= -0.143). According to the results (R×100), somatic and cognitive anxiety explained 5.6 % and 7.61% of injuries in junior football player.

The finding is consistent with previous studies supporting the positive relationship between competitive trait anxiety and sport injuries. Johnson and Ivarsson (2010) showed that injured athletes had a significantly higher level of somatic trait anxiety than non-injured athletes [22]. Our results are also similar to findings of Petrie [35], Williams and Andersen, [6], Steffen et al. [30] and Ivarsson and Johnson [25] establishing a positive relationship between competitive trait anxiety and sport injuries.

A potential explanation for the relationship between cognitive anxiety and injury occurrence is that potentially stressful situation has a positive effect leading to an increased level of state anxiety and/or peripheral narrowing [36]. According to Kerr and Fowler (1988), athletes with a high level of trait anxiety more often reported narrowing concentration and attention than other athletes [37]. These findings could explain why anxiety is often found to be a predictor of sport injuries. High anxiety levels also seem to lead to peripheral narrowing, thus higher injury vulnerability. Athletes who are not sufficiently apprehensive of threatening stimuli could be more likely to throw themselves into situations beyond their capacity to control [22]. In such cases, the athletes could be exposed to a high risk of injury. Thus, in the present study the injury occurrence increased as cognitive anxiety raised.

In the current study, somatic anxiety showed to have a significant relationship with injury occurrences which is consistent with Perna et al. [38], Perna et al. [20] and Williams and Anderson [19] studies. In an extension of the Williams and Andersen model, Perna et al. [38] posited that increased autonomic nervous system activation and possible concomitant behavioral disruptions (e.g. sleep disturbance) resulting from heightened negative affect may act in synergy with the demands of heavy exercise to increase risk of illness and injury [20,37]. That is, psychological distress may impair muscle growth and repair processes by prolonging the presence of post exercise catabolic hormones (e.g. cortisol) that also impair immunity and inhibit the secretion and action of anabolic factors such as growth hormone and insulin-like growth factors [20]. Negative emotion-linked increases in stress hormones (i.e. cortisol) in turn may increase prevalence of injury that is created by high-intensity and high-volume training illness among competitive athletes [38]. Extant models posit that when added to physiological demands of exercise training, psychological stress may cause interactive perturbations in attention, affect, behavior and stress hormone mediated disruptions to immune and skeletal muscle system recovery [19, 22].

In the present study, there was a negative correlation between self-confidence and sport injury occurrence but not significant. Our study was inconsistent with Short et al. [27] study that found a negative significant relationship between self-confidence and injury occurrence; the reason may be the difference in the number of participants as their sample included 434 subjects in three different sports. Magyar and Chase (1996) suggested that fear of injury exists when an athlete lacks confidence in the ability to perform successfully in a threatening or taxing situation [39]. Injured athletes have expressed low self-efficacy in their perceived ability to perform skills and movements required by their specific sport without re-injuring themselves [40].
CONCLUSION

According to the results of the present study and previous researches, psychological aspect seems to be added to the list of sport injury risk factors; this aspect along with other risk factors may influence injury occurrence in junior soccer players. Therefore, psychological factors should be considered in injury preventing programs. Future research could be conducted with a control group to examine possibility of psychological intervention to prevent sports injuries. Also, it is necessary in future researches to examine psychological factors in other skill levels and ages.

REFERENCE