BSc in Psychology

Depression, Anxiety, and Stress Symptoms among Football Players in Iceland: The Effects of Injuries, Overtraining and Insecurity

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Foreword

Submitted in partial fulfillment of the requirements of the BSc Psychology degree, Reykjavik University, this thesis is presented in the style of an article for submission to a peer-reviewed journal.
Abstract
The prevalence of mental disorders in athletes has remained unclear and an inconsistency has occurred between studies of whether the prevalence is higher, lower or similar to the general public. However, research has indicated several risk markers related to an increase in the prevalence of mental disorders such as depression, anxiety, stress and eating disorders. Factors such as suffering from injuries, overtraining and insecurity has been found to be related to an increase in mental disorders. The present research aimed to study the prevalence of depression, anxiety and stress among football players in Iceland and potential risk markers. The participants of the study were 254 football players from six of the 13 clubs that compete in Iceland’s top league, Pepsi-league, and either played for the first team, or the under 20s team. Males were 63% and female 37%. The results of the study indicated a great difference between the genders. Furthermore, it revealed a strong relation between insecurity, as well as dissatisfaction with the club with a higher prevalence of depression and anxiety. However, inconsistent with former research, injuries and overtraining had a weak relation with anxiety, depression, and stress.

Keywords: mental health, football players, injuries, overtraining, insecurity

Útdráttur

Lykilorð: geðheilsa, knattspyrna, meiðsl, líkamlegt álág, óöryggi
Depression, Stress and Anxiety Symptoms among Football Players in Iceland: The Effects of Injuries, Overtraining and Insecurity

A common myth has existed in sports that athletes who play and compete at the highest level must be both emotionally and mentally strong to be able to handle the pressure that follows from sports (Hammond, Giallorette, Kubas, & Davis, 2013). Despite several studies on athletes’ mental health, not much is known about the prevalence of it (Reardon & Factor, 2010). An inconsistency has remained between studies of the prevalence of mental disorders in athletes, and whether the prevalence of disorders such as anxiety and depression are higher or lower among athletes compared to the general population (Gulliver, Griffiths, Mackinnon, Batterham, & Stanimirovic, 2015; Hammond et al., 2013; Lawlor & Hopker, 2001; Reardon & Factor, 2010; Schaal et al., 2011).

Research has found the prevalence of mental disorders among athletes to be higher than for the general population, as well as lower, depending on the type of the mental disorder (APA, 2013; Gulliver et al., 2015; Schaal et al., 2011). Gulliver’s et al. (2015) study revealed that the prevalence of anxiety was from 7.1% for generalized anxiety disorder up to 14.7% for social anxiety among athletes. According to the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM 5) the 12 month prevalence of generalized anxiety disorder is 2.9% and 7% for social anxiety disorder (APA, 2013). Therefore, these results indicate that athletes suffer from anxiety in a higher degree than the general population. However, it is hazardous to hypothesize that athletes suffer from mental disorders in a greater degree overall. Schaal and colleagues (2011) studied depression among athletes compared to non-athletes and the results indicated that depression was lower among the athletes. These results are concurrent with Lawlor and Hopker’s (2001) study, which revealed that exercise was associated with anti-depression due to the release of serotonin in the brain following exercise.
When particular groups of athletes within sports have been studied, the results have demonstrated difference in the prevalence of mental disorders (Appaneal, Levine, Perna, & Roh, 2009; Ardern, Taylor, Feller, & Webster, 2012; Hughes & Leavy, 2012; Mainwaring, Hutchison, Bisschop, Comper, & Richards, 2010; Rozen & Horne, 2007; Schaal et al., 2011). Athletes suffering from injuries have been found to experience more psychological distress compared to non-injured athletes (Brewer, 2001; Petrie & Perna, 2004; Rozen & Horne, 2007). Furthermore, research has shown that injured athletes have a greater prevalence of depression symptoms, as well as mood disturbance such as anger, confusion and tension compared to non-injured athletes (Appaneal et al., 2009; Rozen & Horne, 2007).

Additionally, gender difference has been demonstrated in athletes’ mental health (Appaneal et al., 2009; Schaal et al., 2011). Appaneal and colleagues’ (2009) research revealed that female athletes suffered from a greater post-injury depression compared to male athletes and took a longer time to recover from it. Female athletes have also been found to meet the diagnoses for anxiety disorders in 11.3% cases versus 7.1% among male athletes (Schaal et al., 2011). It shall be noted that research has shown that gender-based difference in anxiety can be due to genetic, physiological and socio-environmental levels and occurs in most populations which should be considered in the literature (McLean & Anderson, 2009).

Similar to injuries, overtraining has been found to have negative effects on athletes’ mental health (Hughes & Leavy, 2012). Overtraining is described as an experiential syndrome characterized by emotional and physical exhaustion, reduced accomplishment, and sport devaluation (Raedeke & Smith, 2001). The prevalence of overtraining in athletes has been inconsistent between studies, ranging from 20% to 60% (Peluso & Andrade, 2005). This inconsistency between studies is believed to be due to different types of sports in research, where overtraining is thought to be higher among endurance athletes. Research has indicated negative effects of overtraining on athletes’ mental health, such as increased depression, low
motivation, anger and eating disorders (Hughes & Leavy, 2012). Moreover, overtraining is demonstrated to cause burnout for up to 10% of athletes which has been exhibited to affect their mood, self-esteem, loss of confidence and depression (Cresswell & Eklund, 2007; Hughes & Leavy, 2012).

The greatest limitation to the aforementioned studies is that they have not aimed to study a particular sport, but to compare different types of athletes to each other (Appaneal et al., 2009; Cresswell & Eklund, 2007; Hughes & Leavy, 2012; Rozen & Horne, 2007). Therefore, it is important for further research to focus on a certain type of sport.

Risk markers of football players’ mental health has been studied to some extent worldwide (Aoki, O’Hata, Kohno, Morikawa & Seki, 2012; Gouttabarge, Aoki & Kerkhoffs, 2015; Gouttebarge, Frings-Dresen & Sluiter, 2015). Studies have indicated that professional football players are in serious danger of suffering from acute, recurrent and severe injuries which can be numerous and have several different outcomes (Aoki et al., 2012). Injuries can last for few weeks, up to long periods of no training or competing. However, research has shown that the psychological effects of injuries are not dependent on the duration of injuries (Gulliver et al., 2015). Studies have revealed that both severe and recurrent injuries can be a great physical, as well as psychosocial stressor for professional football players.

Gouttebarge and colleagues (2015) studied the prevalence of symptoms of common mental disorders and adverse health behaviours among male professional football players. Along with that they explored the relation of mental disorders and adverse health behaviour to severe injuries, surgeries, life events, and career dissatisfaction. As the results of aforementioned research of the psychological effects of injuries have indicated, Gouttebarge and colleagues predicted that injuries and undergoing surgery were associated with a higher prevalence of common mental disorders in football players. The results of the study indicated a higher prevalence of mental disorders among football players who suffered from severe
injuries compared to those who did not suffer from it. Adverse nutrition behaviour was the most common mental disorder (58.1%) and anxiety and depression were the second most common mental disorders with a one-month prevalence of 37.9%. Furthermore, severe injuries were significantly correlated with distress, anxiety and depression and adverse alcohol behaviour.

Gouttebarge, Frings-Dresen and Sluiter (2015) did a similar research on football players’ mental health. The results of the study indicated an association of common mental disorders with injuries and operations and that severe injuries and surgery of professional football players could have a great impact on psychological factors. Gouttebarge and colleagues predicted that rivalry between football players to secure their place in the team influenced their mental health in general, as well as when suffering from injuries. Due to injuries, players experience negative mental effects due to fear to lose their spot on the team, as well as feeling like they are letting coaches and managers down by not being able to play. The greatest limitation to Gouttebarge and colleagues’ studies is the lack of female football players. It is highly important to study females’ mental health in football, especially where research has shown that female athletes are more likely to be diagnosed with mental disorders than males (Hammond et al., 2013; Schaal et al., 2011).

Aforementioned studies have been ground-breaking in disclosing the prevalence of athletes’ mental health and the association of injuries and overtraining to depression, anxiety and psychological stress. However, further research is required. It is important to add to the knowledge of athletes’ mental health, as well as taking a step towards gender equality in research among football players. The focus of the current research is to study the prevalence of depression, anxiety and psychological stress in football players in Iceland and the association of mental health with injuries, overtraining and insecurity. Based on aforementioned literature the following hypotheses were addressed:
1. Injured football players would score higher on a depression and anxiety scale compared to non-injured players.

2. Injured female football players would score higher on a depression and anxiety scale compared to injured male football players.

3. Football players who experienced overtraining would score higher on depression, anxiety and stress scale compared to players who did not experience overtraining.

4. Football players who were insecure with their spot on the team would score higher on anxiety and depression scale compared to players who were secure with their spot on the team.

Method

Participants

The population of this research were football players in Iceland. They were chosen by convenience sample and were 254 in total, 63% (n = 160) male and 37% (n = 94) female. The response rate was 96.1%, whereas 10 participants refused to take part in the survey, or returned an empty questionnaire. Age of participants was from 15 to 34 years old. They came from six clubs in Iceland’s top league, and either played for the under 20s team or the first team of the club. Total of 39.4% (n = 100) of participants played for the under 20s team and 60.6% (n = 154) for the first team. Of the 254 participants, 94.1% (n = 239) were Icelandic and 5.9% (n = 15) had foreign origins. The players who participated were those who attended practice the day of administration, which was February 8th to 15th in 2018 depending on the club.

Measurements

The instrument of the research was a 3 page, 33 question long survey that was administered to participants (Appendix A). The football players had an option to choose between answering the questionnaire in Icelandic or English.
Independent variables. The independent variables of the research were six in total. The effects of gender on participants’ mental health was examined where several studies have indicated female athletes to score higher on depression and anxiety compared to males. Measuring of overtraining in the current research was a question on a Likert scale regarding how much or little players experienced physical stress. The measure of injuries was a multiple response question. The options were computed together and divided into two categories; players who had suffered injuries and those who had not been injured. The environmental factors, satisfaction with the football club, interest in football and security with a place on the team were all measured on a Likert scale, by one question each.

Dependent variables. Depression, anxiety and stress symptoms in participants was examined with DASS-21 (Lovibond & Lovibond, 1995). The 21 questions can be divided into three sub-categories, 7 questions for each symptom. Table 1 provides the cut-off scores for severity labels in each symptom. The score of each factor was multiplied by two to examine the final score, due to DASS-21 being half the version of DASS-42.

Table 1

Cut-off Scores for Conventional Severity Labels of DASS-21

<table>
<thead>
<tr>
<th></th>
<th>Anxiety</th>
<th>Depression</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>0-7</td>
<td>0-9</td>
<td>0-14</td>
</tr>
<tr>
<td>Mild</td>
<td>8-9</td>
<td>10-13</td>
<td>15-18</td>
</tr>
<tr>
<td>Moderate</td>
<td>10-14</td>
<td>14-20</td>
<td>19-25</td>
</tr>
<tr>
<td>Severe</td>
<td>15-19</td>
<td>21-27</td>
<td>26-33</td>
</tr>
<tr>
<td>Extremely Severe</td>
<td>20-42</td>
<td>28-42</td>
<td>34-42</td>
</tr>
</tbody>
</table>

A factor analysis for DASS-21 was performed to examine whether questions for each sub-category were one factor, or whether questions did not have an acceptable communality to a given symptom. Questions regarding stress symptoms were one factor. However, there
was an overlap of questions regarding anxiety and depression in the second two factors. A factor analysis for each symptom was performed as well. Intended stress questions formed one factor and the scale had an acceptable internal consistency (Cronbach’s $\alpha = .802$), as well as depression (Cronbach’s $\alpha = .783$). Intended anxiety questions, however, formed two factors, with one question standing out. Despite that, the scale, with all the seven variables had an acceptable internal consistency (Cronbach’s $\alpha = .701$) and was, therefore, used in the analysis of the data.

Studies on the psychometric properties of the English version of DASS abroad has indicated an acceptable factor construction (Crawford and Henry, 2003). Research on the psychometric properties of DASS in the Icelandic translation by Pétur Tyrfingsson has indicated an acceptable consistency of the depression and anxiety scale (Guðjónsson, Sigurðsson, Smári & Young, 2009; Karlsdóttir, 2006). However, there is a need for further adjustment of the stress scale according to Karlsdóttir’s (2006) research. Guðjónsson and colleagues’ (2009) research on the mean score of DASS in an Icelandic research indicated that the mean of depression in non-clinical sample was 4.1, 3.7 for anxiety and 8.2 for stress.

**Procedure**

The administration of the study was from February 8th to 15th in 2018, depending on the club. The researcher handed over the questionnaire to the participants, either before or after the players attended practice. Before administration, the researcher and coaches had guaranteed that the players were not in any hurry to answer the list and the players were imparted that they could take the time they needed to answer all 33 questions. Along with that, they were assured of full confidentiality, and that the answers were neither traceable back to each and every one of them, nor the football club they played for. It was made clear that participants could ask the researcher about any question if something about the
questionnaire was unclear. When participants had finished answering the list they put it in a closed box.

The questionnaire included personal questions that could have evoked sensitive feelings. The questions concerned mental health of participants, as well as sexual harassment and sexual abuse. The participants were assured that they were neither obliged to answer single questions, nor the whole questionnaire.

**Statistical Analysis**

The statistical analysis of the study was performed in SPSS Statistics, version 24. Descriptive analysis was applied, which demonstrated the mean and standard deviation of anxiety, depression and stress among football players, along with the mean of each predictor. The distribution for the three outcome variables was demonstrated. It provided results of how many players were above the cut-off score for each sub-category in each symptom. Pearson’s correlation was employed to address the strength of the relation between each predictor to the three outcome variables, and the significance of the correlation.

Hierarchical linear regression analysis was applied in analysing the results of the research. Three different regression models were performed to address three of the hypotheses, one model for each mental health symptom. In all the three regression models, gender was placed first, to receive the total explanation of gender for each symptom. A functional analysis of variance (FANOVA) was applied to examine the interaction of gender and injuries on anxiety and depression score. Football players who had been injured once were excluded in the FANOVA, due to that group being extremely large. Therefore, players who had not been injured were compared to those who had been injured more than once.

The assumption of multi-collinearity among predicting variables was met. The tolerance measure of the predictors in the regression models was above .2 in all cases. Therefore, correlations between the predictors should not affect the regressions’ results.
Results

Descriptive Statistics, Distribution and Correlation

In this research, there were a total of six predicting variables for football players’ mental health. Table 2 examines the number of participants who answered each question, for the predicting and outcome variables. Along with that, it provides the lowest and highest score of each measure and the mean and standard deviation. Anxiety, depression and stress were uncommon among participants where depression had the lowest mean score ($M = 3.87, SD = 5.06$) and stress the highest ($M = 7.34, SD = 6.45$).

Table 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Min.</th>
<th>Max.</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>248</td>
<td>0</td>
<td>28</td>
<td>4.23</td>
<td>4.66</td>
</tr>
<tr>
<td>Depression</td>
<td>247</td>
<td>0</td>
<td>28</td>
<td>3.87</td>
<td>5.06</td>
</tr>
<tr>
<td>Gender</td>
<td>254</td>
<td>1</td>
<td>2</td>
<td>1.37</td>
<td>0.48</td>
</tr>
<tr>
<td>Injuries</td>
<td>254</td>
<td>1</td>
<td>2</td>
<td>1.90</td>
<td>0.30</td>
</tr>
<tr>
<td>Interest</td>
<td>253</td>
<td>2</td>
<td>5</td>
<td>4.74</td>
<td>0.55</td>
</tr>
<tr>
<td>Overtraining</td>
<td>252</td>
<td>1</td>
<td>7</td>
<td>5.07</td>
<td>0.99</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>253</td>
<td>1</td>
<td>5</td>
<td>4.36</td>
<td>0.85</td>
</tr>
<tr>
<td>Security</td>
<td>251</td>
<td>1</td>
<td>5</td>
<td>3.61</td>
<td>1.16</td>
</tr>
<tr>
<td>Stress</td>
<td>237</td>
<td>0</td>
<td>34</td>
<td>7.34</td>
<td>6.45</td>
</tr>
</tbody>
</table>

Figure 1 demonstrates the distribution of participants score on DASS-anxiety scale. Total of 25 participants scored moderate anxiety, three severe anxiety and four participants were above the cut-off score for extremely severe anxiety. As seen on Figure 1 most participants scored normal or mild severity, indicating a low level of anxiety among players.
Figure 1. Distribution of players’ anxiety.

Figure 2 reveals the distribution of participants score on DASS-depression scale. Total of 16 participants scored moderate depression, one for severe depression, and one for extremely severe depression. Similar to anxiety, there was a low level of depression among football players, where most participants scored normal or mild severity.

Figure 2. Distribution of players’ depression.

Figure 3 provides the distribution of participants score on DASS-stress scale. Total of eight participants scored moderate stress, five severe stress and one scored extremely severe stress. Similar to both anxiety and depression, most participants scored normal or mild severity of stress.
Table 3 provides examination of correlation between the predicting and outcome variables. The six predictors were not all significantly correlated with the three outcome variables of the research.

Table 3

Pearson’s Correlation between the Predicting Variables and Outcome Variables

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.267**</td>
<td>.288**</td>
<td>.304**</td>
</tr>
<tr>
<td>Security</td>
<td>-.192**</td>
<td>-.219**</td>
<td>.088</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-.178**</td>
<td>-.200**</td>
<td>-.175**</td>
</tr>
<tr>
<td>Overtraining</td>
<td>.181**</td>
<td>.115*</td>
<td>.143*</td>
</tr>
<tr>
<td>Interest</td>
<td>-.114*</td>
<td>-.136**</td>
<td>-.068</td>
</tr>
<tr>
<td>Injuries</td>
<td>-.054</td>
<td>.078</td>
<td>-.039</td>
</tr>
</tbody>
</table>

*Note. *p < .05. **p < .001.

Gender had the strongest correlations with the three outcome variables, where females scored significantly higher than males on anxiety, depression and stress. The weakest correlation was between injuries and the three outcome variables, with none being
significant. The more overtraining players suffered, the less satisfaction, and the less interest, the higher players scored on each mental health symptom. Insecurity had a strong, significant relation to an increase in anxiety and depression as well.

**Hierarchical Linear Regression for anxiety, depression and stress**

To test hypotheses 1, 3 and 4, three different hierarchical linear regression models were applied to predict anxiety, depression and stress among football players in Iceland.

**Anxiety.** Table 4 provides results of four different hierarchical linear regression models predicting anxiety among football players. As seen in model 1 on Table 4, gender had a strong, positive effect on anxiety among football players. According to $R^2$ (R square) the model explained a total of 7.1% in anxiety among football players.

Table 4

*Hierarchical Linear Regression model predicting anxiety among football players*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1 $\beta$</th>
<th>Model 2 $\beta$</th>
<th>Model 3 $\beta$</th>
<th>Model 4 $\beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.267**</td>
<td>.253**</td>
<td>.249**</td>
<td>.272**</td>
</tr>
<tr>
<td>Overtraining</td>
<td>-</td>
<td>.146*</td>
<td>.151*</td>
<td>.111*</td>
</tr>
<tr>
<td>Injuries</td>
<td>-</td>
<td>-</td>
<td>-.054</td>
<td>-.018</td>
</tr>
<tr>
<td>Security</td>
<td>-</td>
<td>-</td>
<td>-.136*</td>
<td>-.169*</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.088</td>
</tr>
<tr>
<td>Interest</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total $R^2$</td>
<td>.071**</td>
<td>.095**</td>
<td>.098**</td>
<td>.160**</td>
</tr>
</tbody>
</table>

*Note. *$p < .05. **$p < .001.*

Model 2 in Table 4 provides results of the effects of gender and overtraining on anxiety. Overtraining had a positive effect on anxiety among football players, indicating a higher anxiety among players who experienced overtraining. The model explained a total of 9.5% variance in anxiety among players, adding 2.4% from model 1. By adding injuries in
model 3, the explanation increased by 0.3%, with the effects of injuries being statistically insignificant. Model 4 provides results after adding three predictors. Security, satisfaction and interest increased the explanation of anxiety up to 16%. Security and satisfaction had negative effects on players’ anxiety, indicating a higher anxiety among those who were insecure and dissatisfied. The effect of interest was, however, insignificant.

**Depression.** In Table 5, the results of the hierarchical linear regression models predicting depression among football players are demonstrated. As seen in model 1, gender had a strong, positive effect on depression and explained a total of 8.3% in the variance of depression among football players. In model 2 the effects of gender and overtraining on depression are examined. The effects of overtraining was not significantly related to depression, increasing the explanation only by 0.8%.

Table 5

*Hierarchical Linear Regression model predicting depression among football players*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
</tr>
<tr>
<td>Gender</td>
<td>.288**</td>
<td>.281**</td>
<td>.287**</td>
<td>.307**</td>
</tr>
<tr>
<td>Overtraining</td>
<td>-</td>
<td>.077</td>
<td>.068</td>
<td>.027</td>
</tr>
<tr>
<td>Injuries</td>
<td>-</td>
<td>-</td>
<td>.089</td>
<td>.133*</td>
</tr>
<tr>
<td>Security</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.152*</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.215**</td>
</tr>
<tr>
<td>Interest</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.136*</td>
</tr>
<tr>
<td>Total R(^2)</td>
<td>.083**</td>
<td>.091**</td>
<td>.098**</td>
<td>.197**</td>
</tr>
</tbody>
</table>

*Note. *\( p < .05 \), **\( p < .001 \).*

The effects of injuries in model 3 were insignificant and slightly increased the explanation from the previous model. However, as seen in model 4, different from model 3, effects of injuries became significantly related to depression. The predictors added in model 4
all had negative effects on depression. Of the added predictors, satisfaction had the strongest relation to depression. The model explained a total of 19.7% of the variance in depression among football players, increasing it by more than 10% from the first model.

**Stress.** Table 6 provides the results of the hierarchical linear regression models predicting stress among football players. Model 1 in Table 6 provides results of the effects of gender on stress. Similar to Table 4 and 5, gender had a strong, positive effect on stress and explained a total of 9.3% in the variance of stress. In model 2 and 3 the effects of gender and overtraining are examined on the one hand, and gender, overtraining and injuries on the other. Both of the predictors had insignificant effects on stress, and, therefore, did not add much to the statistical explanation of stress.

Table 6

*Hierarchical Linear Regression model predicting stress among football players*

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(\beta)</td>
<td>(\beta)</td>
<td>(\beta)</td>
<td>(\beta)</td>
</tr>
<tr>
<td>Gender</td>
<td>.304**</td>
<td>.288**</td>
<td>.285**</td>
<td>.311**</td>
</tr>
<tr>
<td>Overtraining</td>
<td>-</td>
<td>.105</td>
<td>.108</td>
<td>.101</td>
</tr>
<tr>
<td>Injuries</td>
<td>-</td>
<td>-</td>
<td>-.032</td>
<td>.011</td>
</tr>
<tr>
<td>Security</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.017</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.211*</td>
</tr>
<tr>
<td>Interest</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-.065</td>
</tr>
<tr>
<td>Total (R^2)</td>
<td>.093**</td>
<td>.102**</td>
<td>.103**</td>
<td>.148**</td>
</tr>
</tbody>
</table>

*Note.* *p* < .05. **p** < .001.

As seen in model 4, satisfaction merely had significant effects on football players’ stress of the three added variables. The relations were negative, indicating increased stress among dissatisfied players. The explanation of model 4 increased by 4.5% from model 1, explaining a total of 14.8% in the variance of stress among football players.
Interaction Between Gender and Injuries on Depression and Anxiety

Figure 5 demonstrates the interaction between gender and injuries on their depression score. Both male and female players who had been injured scored higher on depression compared to those who had not suffered from injuries. However, there was not a significant interaction between gender and injuries on depression $F(1, 49) = .547, p = .463$.

![Depression score graph]

**Figure 4.** Interaction between gender and injuries on depression.

Similar to Figure 4, Figure 5 demonstrates the interaction between gender and injuries on anxiety.

![Anxiety score graph]

**Figure 5.** Interaction between gender and injuries on anxiety.
Male players who had suffered injuries scored lower on anxiety compared to those who had not been injured. Females’ score, however, was higher for those who had been injured compared to players who had not been injured. The interaction between gender and injuries on anxiety was practically significant, $F(1, 49) = 3.435, p = .07$.

**Discussion**

This research attempted to study the risk markers of an increase in depression, anxiety and stress among football players in Iceland. The main aim of the research was to explore the effects of injuries, overtraining and insecurity on mental health among male and female football players. The results of the study indicated a similar prevalence of depression, anxiety and stress among football players as for the general population in Iceland (Guðjónsson et al., 2009). Female participants scored significantly higher on each mental health symptom, which is consistent with former research (Appaneal et al., 2009; McLean & Anderson, 2009; Schaal et al., 2011).

Due to former findings, the first hypothesis predicted that injured football players would score higher on depression and anxiety compared to non-injured players (Appaneal et al., 2009; Brewer, 2001; Gouttebarge et al., 2015; Gulliver et al., 2015; Petrie & Perna, 2004; Rozen & Horne, 2007). However, the current study did not find a strong relation between injuries and mental disorders. The regression models and the correlation of injuries with anxiety and depression revealed a weak, insignificant associations. These results were unexpected as they go against former findings, which have repeatedly indicated a strong relation of injuries and a higher prevalence of mental disorders (Appaneal et al., 2009; Gouttabarge et al., 2015; Rozen & Horne, 2007). The inconsistency with the results of this study to former research might have occurred due to the great number of injured players. In Appaneal and colleagues’ research (2009), there was a similar number of injured and non-injured athletes. However, in this research, only 10.2% of the participants had never suffered
injuries. This discrepancy might have affected the results of the study, and therefore, there is a need for further research.

It was hypothesized that injured female football players would score higher on anxiety and depression compared to injured males. The results revealed that the interaction between gender and injuries on depression was insignificant. These results are against former research which has indicated female athletes to suffer from a greater post-injury depression compared to males (Appaneal et al., 2009). However, there was a strong indication of interaction between gender and injuries on anxiety. Due to these results, the second hypothesis was not fully supported, but should without hesitation be studied furthermore.

It was predicted that football players who experienced overtraining in practice and competition would score higher on depression, anxiety and stress scale. Overtraining had a significant correlation with all three symptoms, indicating an increase in anxiety, depression, and stress among football players under greater physical strain. These results are in accordance with former research that has indicated negative effects of overtraining on athletes’ mental health (Hughes & Leavy, 2012). However, the hierarchical regression models revealed that players who experienced overtraining merely scored significantly higher on anxiety compared to those who did not suffer from overtraining, but not on depression and stress. Due to these results the third hypothesis was not fully supported.

As hypothesized, football players who were insecure with their place on the team experienced greater anxiety and depression symptoms compared to those who pleaded their place as secure. These results are in accordance with Gouttebarge, Frings-Dresen and Sluiter (2015) predictions that football players’ insecurity affected their mental health. These findings are interesting, and the effects of insecurity should be studied furthermore. Along with that, the effects of two other environmental factors on mental health were examined despite not being hypothesized. These were the effects of satisfaction and interest on mental
health. The hierarchical regression models indicated that satisfaction of players with their own football club had a significant effect on mental health. These findings suggest that players who are dissatisfied with their club, are more likely to have greater symptoms of anxiety, depression and stress. Along with that, the results of the regression models revealed that players’ interest in football had significant effects on depression, indicating a greater depression among those who have less interest in the sport.

The aforementioned findings of this research have revealed potential risk markers of football players in Iceland to develop anxiety, depression and stress. The results exposed the effects environmental factors such as insecurity, dissatisfaction and interest can have on football players’ mental health. These findings suggest that managers potentially play a big role in the mental health of players. These environmental factors, along with overtraining, seem to be a possible difficulty that clubs in the Pepsi-league should consider to evaluate to prevent players from developing further mental disorders.

The present research has several limitations. The greatest limitation to the following study is the sample size. Total of 40% of the female football teams and 41.7% of the male football teams in the Pepsi-league participated in the research. Another limitation to the research is the questionnaire. The factor analysis of DASS-21 indicated a wandering and overlap of symptoms. Along with that, the participants in the research might have found it difficult to answer single questions due to a lack of comprehension, or have found themselves in a hurry when answering the questionnaire. These limitations might have led to a response-bias.

The strengths of the research is the response rate of the sample, where only 10 participants denied to take part in the research. Former research has aimed to study male football players. With this research, a step has been taken towards gender equality in research on football players, along with a comparison of male and female football players’ mental
health. The findings of the study enhance the information of the prevalence of mental disorders among football players, as well as potential factors that might increase such disorders. Further research should aim to study mental health among male and female football players more precisely and what factors have negative effects on football players’ well-being.
References


Heilsa knattspyrnuleikmanna í efstu deild og 2. flokki á Íslandi

Eftirfarandi spurningalisti er rannsóknarverkefni Maríu Mjallar Björnsdóttur í sálfræði við Háskólan í Reykjavík. Hann er stuttur, 3 bláðsíður með 33 spurningum um knattspyrnu og æfingar og ætti aðeins að taka 4-5 mínútur að svara honum. Engin möguleiki er á að rekja svör þátttakenda aftur til þeirra og er fullri leynd gætt við vinnslu gagna. Þér er hvorki skylt að svara einstaka spurningum né spurningalistanum í heild. Ef einhverjar vangaveltur vakna eða eithvað er óljóst hvað varðar spurningalistann, ekki hika við að spyrja.

Með fyrirfram þökk,

María Mjöll Björnsdóttir, BSc-nemandi í sálfræði við HR
Þorlákur Karlsson, dósent í sálfræði við HR
1. Hvaða lið styður þú í ensku úrvalsdeildinni?
   ___ Arsenal
   ___ Chelsea
   ___ Liverpool
   ___ Manchester United
   ___ Ekkert lið
   ___ Annað lið, hvaða?________________

2. Spilar þú með mestaraflokk eða 2. flokki?
   ___ Meistaraflokk
   ___ 2. flokki

3. Hvort spilar með með karla- eða kvennalíði?
   ___ Karlalíði
   ___ Kvennalíði

4. Hversu ánægð/ur eða óánægð/ur ert þú með það lið sem þú spilar knattspyrnu með?
   ___ Mjög ánægð/ur
   ___ Fremur ánægð/ur
   ___ Í meðallagi
   ___ Fremur óánægð/ur
   ___ Mjög óánægð/ur

5. Hversu örugg/ur eða óörugg/ur ert þú með sæti þitt í liðinu?
   ___ Mjög örugg/ur
   ___ Fremur örugg/ur
   ___ Í meðallagi
   ___ Fremur óörugg/ur
   ___ Mjög óörugg/ur

6. Hversu mikinn eða litinn áhuga hefur þú á knattspyrnu?
   ___ Mjög mikinn
   ___ Fremur mikinn
   ___ Í meðallagi
   ___ Fremur litinn
   ___ Mjög litinn/Engan

7. Hversu oft í viku að meðaltali æfir þú knattspyrnu eða aðra erfiða hreyfingu?
   ___ Sjaldnar en fjórum sinnum
   ___ Fjórum sinnum
   ___ Fimm sinnum
   ___ Sex sinnum
   ___ Sjö sinnum
   ___ Átta sinnum
   ___ Oftar en átta sinnum
8. Hversu mikið eða lítið þykir þér líkamlegt álag vera á þér?
   ___ Afar mikið
   ___ Mjög mikið
   ___ Fremur mikið
   ___ Í meðallagi
   ___ Fremur lítið
   ___ Mjög lítið
   ___ Afar lítið/Ekkert

   ___ Mánud
   ___ Hálfa árið
   ___ Fyrir meira en hálfu ári
   ___ Fyrir meira en ári
   ___ Hef ekki meiðst → farðu í spurningu 11

10. Hversu mikil eða lítið áhrif höfðu meiðslin á knattspyrnupátttökun þína?
    ___ Mjög mikil
    ___ Frekar mikil
    ___ Í meðallagi
    ___ Frekar lítil
    ___ Mjög lítil/Engin

11. Hefur þú orðið fyrir kynferðislegri áreitni í fótboltanum, sem sé frá einhverjum sem er í fótbolta, eða vinnur við hann?
    ___ Nei, aldrei
    ___ Já, 1 sinni
    ___ Já, 2 sinnum
    ___ Já, 3 sinnum eða oftar

12. Hefur þú orðið fyrir kynferðislegu ofbeldi í fótboltanum, sem sé frá einhverjum sem er í fótbolta, eða vinnur við hann?
    ___ Nei, aldrei
    ___ Já, 1 sinni
    ___ Já, 2 sinnum
    ___ Já, 3 sinnum eða oftar
MENTAL HEALTH AMONG FOOTBALL PLAYERS IN ICELAND

Hér fyrir neðan er listi sem tengist líðan þinni. Lestu hverja fullyrðingu og merktu við þann valkost sem segir til um hve vel hver fullyrðing áttí við í þínu tilviki sifustu vikuna. Eyddu ekki of miklum tíma í að velta fyrir þér hverri fullyrðingu og merktu við einn svarkost í línu.

<table>
<thead>
<tr>
<th></th>
<th>Átti alls ekki við mig</th>
<th>Átti við mig að einhverju leyti eða stundum</th>
<th>Átti töluvert vel við mig eða drjúgan hluta vikunnar</th>
<th>Átti mjögg vel við mig eða mest allan tímann</th>
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<td>Íg fann fyrir munhjörðri</td>
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<td>Íg vartist alls ekki geta fundið fyrir neinum göðum tilfinningum</td>
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<td>Íg átti í erfðoleikum með að anda (t.d. allt of hröð öndum, mæði án likamlegar áreynslu)</td>
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<td>Íg hafði tilheingingu til að bregðast of harkalega við aðstæðum</td>
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<td>Mér fannst erfitt að slappa af</td>
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<td>Mér fannst ág ekki geta hlakkað til neins</td>
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<td>Mér fannst ág eyða mikill andlegri orku</td>
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<td>Mér fannst ág ekki vera mikils víði sem manneskja</td>
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<td>Mér fannst ág frekar hörundssár</td>
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<tr>
<td>Íg fann fyrir ötta án nokkurrar skynsamlegrar ástæðu</td>
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<td>Mér fannst erfitt að ná mér niður</td>
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<td>Íg varð var/vör við hjartslátinn í mér þó ág hafði ekki reynt a mig (t.d. hraðari hjartsláttur, hjartáð sleppi úr slagi)</td>
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<td>Íg var dapur/dópur og niðurdregn/n</td>
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<tr>
<td>Mér fannst ág vera mjögg pirruð/pirradur</td>
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<tr>
<td>Mér fannst ág nánast gripin/n skelfingu</td>
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<tr>
<td>Íg gat ekki fengið brendandi áhuga á neinu</td>
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<tr>
<td>Íg átti erfitt með að umbera truflanir á þvi sem ág var að gera</td>
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<tr>
<td>Mér fannst lifið vera tilgangslaust</td>
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<tr>
<td>Íg hafði áhyggjur af aðstæðum þar sem ág fengi hræðslukast (panic) og gerði mig að fiffli</td>
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<tr>
<td>Íg fann fyrir skjalfta (t.d. í höndunum)</td>
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<tr>
<td>Mér fannst erfitt að hleypa á mig krafti til að gera hluti</td>
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</tbody>
</table>

Við þökkum þér kærlega fyrir þátttökuna í rannsókninni. Þú mátt skila listanum í kassann þar sem öllum svörum rannsóknarinnar verður safnað saman.
Health of football players in Iceland's top league and under 20s

This questionnaire is María Mjöll Björnsdóttir's research project in psychology at Reykjavík University (RU). It is a short, 3 pages, 33 questions' list about football and exercises and should not take more than 4-5 minutes to answer. There is not a possibility to track participants' answers back to them and the processing of the data will be fully confidential. You are neither obligated to answer single questions nor the whole questionnaire. If there are any speculations or something about the questionnaire is unclear, do not hesitate to ask.

With kind regards,

María Mjöll Björnsdóttir, BSc student in psychology at RU

Þorlákur Karlsson, associate professor in psychology at RU
1. What team do you support in the English Premier League?
   ___ Arsenal
   ___ Chelsea
   ___ Liverpool
   ___ Manchester United
   ___ I do not support any team
   ___ Other, what? _____________

2. Do you play for the first team or the under 20s team?
   ___ First team
   ___ Under 20s team

3. Whether do you play for the men’s- or women’s team?
   ___ Men’s team
   ___ Women’s team

4. How satisfied or dissatisfied are you with the club you play for?
   ___ Very satisfied
   ___ Rather satisfied
   ___ Average
   ___ Rather unsatisfied
   ___ Very unsatisfied

5. How secure or insecure are you with your place on the starting team?
   ___ Very secure
   ___ Rather secure
   ___ Average
   ___ Rather insecure
   ___ Very insecure

6. How much or little is your interest in football?
   ___ Very much
   ___ Rather much
   ___ Average
   ___ Rather little
   ___ Very little/None
7. How many times a week on average do you practice football or another tough exercise?
   ___ Less than four times
   ___ Four times
   ___ Five times
   ___ Six times
   ___ Seven times
   ___ Eight times
   ___ More than eight times

8. Do you find physical stress on you to be much or little?
   ___ Immensely much
   ___ Very much
   ___ Rather much
   ___ Average
   ___ Rather little
   ___ Very little
   ___ None

9. Have you suffered from injuries for the past... (select all choices that apply)?
   ___ Month
   ___ Half a year
   ___ More than half year ago
   ___ More than a year ago
   ___ Have not suffered from injuries → skip to question 11

10. How much or little did the injuries affect your participation in football?
    ___ Very much
    ___ Rather much
    ___ Average
    ___ Rather little
    ___ Very little/None

11. Have you been harassed sexually in football, that is by someone who is in football, or works within it?
    ___ No, never
    ___ Yes, once
    ___ Yes, twice
    ___ Yes, 3 times or more often

12. Have you been sexually assaulted in football, that is by someone who is in football, or works within it?
    ___ No, never
    ___ Yes, once
    ___ Yes, twice
    ___ Yes, 3 times or more often
Here below is a list that relates to your health. Read each statement and label with the alternative applied to you over the past week and put one label in each row. There are no right or wrong answers. Do not spend too much time on any statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Did not apply to me at all</th>
<th>Applied to me to some degree, or some of the time</th>
<th>Applied to me to a considerable degree, or a good part of time</th>
<th>Applied to me very much, or most of the time</th>
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</thead>
<tbody>
<tr>
<td>I was aware of dryness in my mouth</td>
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<tr>
<td>I couldn't seem to experience any positive feelings at all</td>
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<td>I experienced breathing difficulty (eg. excessively rapid breathing, breathlessness in the absence of physical exertion)</td>
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<td>I tended to over-react to situations</td>
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<td>I found it difficult to relax</td>
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<tr>
<td>I felt that I had nothing to look forward to</td>
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<tr>
<td>I felt that I was using a lot of nervous energy</td>
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<td>I felt I wasn't worth much as a person</td>
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<td>I felt that I was rather touchy</td>
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<td>I felt scared without any good reason</td>
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<td>I found it hard to wind down</td>
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<td>I was aware of the action of my heart in the absence of physical exertion (eg. sense of heart rate increase, heart missing a beat)</td>
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<td>I felt down-hearted and blue</td>
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<td>I found myself getting agitated</td>
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<td>I felt I was close to panic</td>
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<td>I was unable to become enthusiastic about anything</td>
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<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
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<td>I felt that life was meaningless</td>
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<td>I was worried about situations in which I might panic and make a fool of myself</td>
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<tr>
<td>I experienced trembling (eg. in the hands)</td>
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<tr>
<td>I found it difficult to work up the initiative to do things</td>
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</table>

We thank you for your participation in the research. You can place the questionnaire in the box where all answers will be collected.