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Screening of Motivation and Psychopathology in Adolescent Male Football Players

Adölesan Erkek Futbolcularda Motivasyon ve Psikopatoloji Taraması

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ABSTRACT

Objectives: Adolescence is a transitional period in which young people experience significant psychological, biological, cognitive, social/emotional, and interpersonal changes. During this period, participation in sports contributes to the positive development of the mind and body. This study aimed to evaluate the motivations for sports participation and general psychopathology risk of male football players in the early adolescence period and to examine their relationship with family education and socio-economic levels.

Materials and Methods: Thirteen and fourteen year old players invited to the national team selections by the Turkish Football Federation were evaluated. The Sports Motivation Scale (SMS), the Childhood Depression Inventory (CDI), and the Screen for Child Anxiety Related Emotional Disorders (SCARED) were used in data collection. Bivariate, multivariate and correlation analyses were conducted.

Results: 57.3% of the participants, were born in the first quartile of the year. There was a negative correlation between the level of parents' education and the years of experience in football. There was no difference between chronological age, age quartiles, and SMS, CDI, or SCARED scores. On the regression analysis, the amotivation score lead to increased depression scores (odds ratio: 2.099, confidence interval: 1.074-4.101, p=0.030).

Conclusion: In the early adolescent period, playing soccer can reduce depression risk scores. It should be remembered that role models and environmental factors might be important determinants for adolescents.

Keywords: Adolescent, football, depression, parents

ÖZ

Amaç: Ergenlik, gençlerde belirgin psikolojik, biyolojik, kognitif, sosyal/emosyonel ve kişilik değişikliklerinin yaşandığı bir geçiş dönemidir. Bu dönemde spora katılım, zihin ve beden gelişimine olumlu katkı sağlar. Bu çalışmada, erken adölesan dönemde erkek futbol oyuncularında spora katılım motivasyonu ve genel psikopatoloji risk değerlendirmesi ve ailenin eğitim ve sosyo-ekonomik düzeyi ile ilişkisini araştırmak amaçlanmıştır.

Gereç ve Yöntem: Türkiye Futbol Federasyonu tarafından ulusal takım seçmelerine davet edilen 13-14 yaş oyuncular değerlendirildi. Veri toplamada; Spor Motivasyon Ölçeği (SMÖ), Çocukluk Çağı Depresyon Enventeri, Çocukluk Çağı Anksiyete Tarama Ölçeği (ÇATÖ) kullanıldı. Çift değişkenli, çok değişkenli ve korelasyon analizleri gerçekleştirildi.

Bulgular: Katılımcıların %57,3'ü yılın ilk çeyreği doğumluydu. Futbol oynama süresi ile aile eğitim düzeyi arasında negatif korelasyon vardı. Kronolojik yaş, yaş çeyrekleri ve SMÖ, ÇDİ veya ÇATÖ arasında farlıklık yoktu. Regresyon analizinde, amotivasyon skorunun depresyon skorunu yükselttiği (olasılık oranı: 2,099, güven aralığı: 1,074-4,101, p=0,030) bulundu.

Sonuç: Erken adölesan dönemde futbol oynamak depresyon risk skorunu azaltabilir. Rol modellerin ve çevresel faktörlerin adölesanların gelişiminde önemli olduğu hatırlanmalıdır.

Anahtar Kelimeler: Adölesan, futbol, depresyon, ebeveyn

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Introduction

Adolescence is a gap from childhood to adulthood, where young people experience significant psychological, biological, cognitive, social/emotional, and interpersonal changes. This period may be roughly divided as early- middle and late adolescence stage.[1] The early adolescence (10-14 years) is characterized by rapid physical and emotional development with an increased interest in and salience of the peer group. Therefore, adolescents may choose to participate more in team activities in the early adolescent period.[2] As is already known, anxiety disorders are among the most common internalizing disorders with a rate of 15.0-20.0% in childhood and adolescence.[3] However, only one third of those receive the necessary treatment.[4] Depression in childhood and adolescence, on the other hand, may increase depression, substance abuse, suicidality, vocational and relationship difficulties and academic failure in adulthood.[5] Adolescents' participation in sports may be associated with reduced levels of depression and suicidality both in the short and long term periods.[6] However, relatively little is known about the prevalence of mental problems as well as related factors among adolescents with active participation in sports.[7]

This study aimed to evaluate the motivation for participation in sports as well as general psychopathology symptoms among male football players in early adolescence and to examine the relationships with familial and socio-economic variables. The adolescent male football players were selected for study due to their elevated risk of mental problems and suicidality, reduced rates of help seeking and high levels of stigmatizing attitudes regarding mental problems.[8-10]

Materials and Methods

This study is a prospective, descriptive survey study, which consisted of 286 volunteer adolescent male football players aged 13-14 years who were invited for the national team selections of the Turkish Football Federation during the Riva National Team Camp in the 2016/2017 league season. This study was approved by the Clinical Research Ethics Committee of İstanbul University Faculty of Medicine with the approval number 287 (date: 13.03.2017).

Data collection was done using the sports motivation scale (SMS) to measure an athlete's motivation toward sports participation, the childhood depression inventory (CDI) for assessing depressive symptoms, and the Screen for Child Anxiety Related Emotional Disorders (SCARED) for measuring anxiety. The monthly income of the family and parents' education levels were classified as primary-secondary-high schools, and college/university. The presence of other people playing sports and/or playing soccer in the family was asked to check for their relationship with participation in sports activities. The players were located to quartile (Q) 1 if born between 1st of January-31st of March, to Q2, if born between 1st of April-30th of June, to Q3, if born between 1st of July-30th of September, and to Q4, if born between 1st of October-31st of December.[11] The players were classified according their in-game positions, such as goalkeeper, defender, midfielder, and striker. Written consent was obtained from all participants and guardians. All participants and their families were informed about the survey. The participants filled out the questionnaires individually on the first day of the camp.

Sports Motivation Scale

The SMS was developed by Pelletier et al.[12] to measure an athlete's motivation toward sports participation, using the self-determination theory framework. Participants' motivation was assessed using 7-point Likert scale ranging from 1 (totally disagree) to 7 (totally agree). The validity and reliability study of the adolescent version of the scale was also performed by Kazak et al.[13] The scale consists of 12-questions and is a time-limited, paper-pencil test, applicable to every branch and level of athletes with identity motivation, extrinsic motivation, intrinsic motivation, and motivation subscales.

Children's Depression Inventory

CDI was developed by Kovacs[14] (1981) to estimate the level of depression in children and adolescents. The CDI consists of 27 self-reported items that cover the behavioral, cognitive and depression symptoms. Each item can be responded as 0, 1, or 2, and it takes 10-15 minutes to answer the whole scale. The total scores can range from 0-54. Each child was asked to choose the best sentence describing his mood for the last two weeks. The cut-off point of CDI is 19, and its reliability for the Turkish population has been verified for children between 6 and 17 years of age by Oy.[14]

Screen for Child Anxiety and Related Disorders

SCARED was developed by Birmaher et al.[15] to screen childhood anxiety disorders, its Turkish adaptation was conducted by Karaceylan[16]. The SCARED is a 41-item child/parent reporting instrument used to identify children with anxiety disorders, which takes approximately ten minutes to complete. It examines five factors: panic-somatic symptoms, separation anxiety, generalized anxiety, school phobia, and social phobia. Children who score ≥25 can be suspected of having anxiety disorders. The items in the SCARED are rated on a three-point scale ranging from 0 (not true or hardly ever true) to 2 (true or often true). The total score ranges from 0-82. The scores are interpreted as; 7 and above - panic disorder and somatic symptoms (0-26), 9 and above - generalized anxiety disorder (0-18), 5 and above - separation anxiety disorder (0-16), 8 and above - social anxiety disorder (0-14), 3 and over school phobia (0-8).[17]

Statistics Analysis

For skewed data, median with range (minimum to maximum) was used. However, the mean ± standard deviation was used for normally distributed numerical data. The student t-test or Mann-Whitney U test was used to compare two normal-distributed independent groups. ANOVA or Krusskall-Wallis tests were used to compare more than two independent groups. The correlation analysis of Pearson or Spearman was used depending on the distribution of variables in examining

correlations between continuous variables. Multivariate regression analysis was performed to evaluate predictors affecting depression and anxiety scores. The significance level was $p<0.05$.

Results

The majority of the (76.6%, n=219) participants were 13 years old and 57.3% (n=164) of the total were born at the Q1. Less than half (44.5%, n=97) of the 13 years old participants were born in Q1 while 26.1% (n=57), 21.1% (n=46) and 8.3% (n=18) were born in Q2, Q3 and Q4; respectively. All of the 14 years old participants were born in Q1 (n=67). The demographic features of the participants are shown in Table 1. Negative correlations were detected between family income, the age of sport initiation (rho=-0.265, p<0.001), and the age of starting amateur football (rho=-0.152, p=0.013). However, there was a weak positive but significant relationship between family income levels and motivation scores (rho=0.118, p=0.047). No correlation was found between family income and external motivation (p=0.266), intrinsic motivation (p=0.916), or identity motivation (p=0.813). Additionally, there was no relationship between family income and CDI scores (p=0.435). Finally, there was a negative correlation between the family income levels and total SCARED scores (rho=-0.128, p=0.030), generalized anxiety (rho=-0.119, p=0.046) and separation anxiety scores (rho=-0.163, p=0.006).

There was a negative correlation between the fathers' educational level, the age of sports initiation (rho=-0.267, p<0.001), and the age of beginning amateur football (rho=-0.174, p=0.004). Similarly, there was a negative correlation between mothers' education level, the age of sports initiation (rho=-0.287, p<0.001), and the age of starting amateur football (rho=-0.200, p=0.001). Additionally, there was a negative correlation between extrinsic motivation and mothers' (rho=-0.147, p<0.013) as well as fathers' education levels (rho=-0.130, p=0.028). There was no correlation between the CDI score and the parents' education levels (p=0.454 and p=0.081, respectively). However, there was negative correlation between the educational level of the mothers and SCARED scores (rho=-0.191, p=0.001), separation anxiety scores (rho=-0.119, p=0.045), panic-somatic disorder scores (rho=-0.168, p=0.004), and generalized anxiety scores (rho=-0.192, p=0.001). Finally, there was a negative correlation between the educational level of fathers, SCARED scores (rho=-0.184, p=0.002), and generalized anxiety scores (rho=-0.182, p=0.002).

There was no relationship between game positions and the subgroups of SMS concerning motivation (p=0.680), intrinsic motivation (p=0.530), extrinsic motivation (p=0.699), and identity motivation (p=0.469). Additionally, there was no correlation between game positions and CDI scores (p=0.874). There in-game positions did not affect SCARED (p=0.565), panic-somatic disorder (p=0.524), generalized anxiety (p=0.515), separation anxiety (p=0.542), social anxiety (p=0.818), and school phobia scores (p=0.277).

There was no correlation between age of sports initiation and motivation (p=0.055), intrinsic motivation (p=0.466), and identity motivation (p=0.654) scores. Similarly, there was no correlation between age of starting amateur football and motivation (p=0.815), intrinsic motivation (p=0.861), extrinsic motivation (p=0.906), identity motivation (p=0.654) scores. There was a weak positive but significant correlation between the age of sports initiation and CDI score (r=0.127, p=0.035). Finally, there was no relationship between the age of starting amateur football and CDI score (p=0.430).

The CDI score was detected as <19.0 in 95.8% (n=272) and ≥19.0 in 4.2% (n=12) of the participants. There was a weak positive, but significant correlation between CDI and motivation scores

Table 1. Demographic features of the participants

Variables	**Mean ± SD**	**Total (N)**
Body weight (kg)	57.4±6.8	286
Height (cm)	170.5±7.1	286
Body mass index (kg/m^2)	19.7±1.7	286
Age of beginning sport (year)	8.0±2.0	286
Age of starting amateur football (year)	10.0±2.0	286
Field position	**%**	**n**
Goalkeeper	10.8	31
Defender	33.6	96
Midfielder	22.4	64
Striker	33.2	95
Age quartiles		
Q1	57.5	164
Q2	20.0	57
Q3	16.1	46
Q4	6.3	18
Maternal education		
Primary school	37.8	108
Secondary school	29.7	85
High school	25.2	72
University	7.3	21
Paternal education		
Primary school	28.7	82
Secondary school	29.7	85
High school	29.0	83
University	12.6	36
Monthly family income (TL)		
<1,400	17.5	50
1,400-2,800	39.9	114
2,800-4,200	32.5	93
4,200-5,600	6.6	19
>5,600	3.5	10

SD: Standard deviation, Q: Quartile

(rho=0.153, p=0.010), whereas this positive correlation was not detected between CDI scores and extrinsic (p=0.417), intrinsic (p=0.565), and identity motivation scores (p=0.308). There was no difference between chronological age, age quartiles, and SMQ, CDI, or SCARED scores (Table 2 and 3). SCARED scores greater than or equal to 25 were found in 31.9% (n=91), panic somatic disorder scores ≥7 in 23.2% (n=66), generalized anxiety scores ≥9 in 11.9% (n=34), separation anxiety scores greater than or equal to 5 in 48.6% (n=139), social anxiety scores ≥8 in 29.8% (n=85), and school phobia scores ≥3 in 21.4% (n=61) of the participants. There was a positive correlation (r=0.122, p=0.040) between identity motivation and separation anxiety scores.

A logistic multiple regression analysis was conducted using the CDI cut-off score (19.0/≥19.0) as the dependent variable to check for affecting variables such as the age of sports initiation, motivation, external, internal, and identity motivation. It was found that the motivation score leads to increased depression scores [odds ratio (OR): 2.099, confidence interval (CI): 1.074-4.101, p=0.030] regardless of other risk factors. Besides, a multivariate analysis was conducted to evaluate the risk factors affecting the SCARED cut-off score (≥25) with the following variables: the age of sports initiation, mothers' education level, game position, family income level, other family members playing football, and or doing another sport. Mothers' education reduced the SCARED score (OR: 0.719, CI=0.549-

Table 2. The relationship of age with Sports Motivation Questionnaire (SMQ), Children's Depression Inventory (CDI) and Screen for Child Anxiety and Related Disorders (SCARED) scores

	Age (years)			
	13.0 (n=219)	14.0 (n=67)	Total (n=286)	
Scale scores	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**	**p-value**
Motivated	1.4±0.6	1.4±0.7	1.3±0.6	0.888
Extrinsic motivation	5.1±1.5	4.9±1.7	5.0±1.6	0.380
Intrinsic motivation	5.6±1.0	5.5±1.0	5.6±1.0	0.616
Self-motivation	4.7±1.7	4.6±1.7	4.7±1.7	0.725
Depression (n=284)	8.2±4.5	9.1±5.5	0.8±0.2	0.287
Anxiety	21.2±11.3	20.4±11.8	21.0±11.4	0.656
Panic-somatic disorder	4.6±3.9	4.8±4.3	4.6±4.0	0.736
Generalized anxiety	4.4±3.2	4.2±3.3	4.3±3.3	0.701
Separation anxiety	5.0±3.0	4.5±2.9	4.9±3.0	0.303
Social anxiety	5.8±3.0	5.5±2.7	5.7±2.9	0.462
School phobia	1.4±1.4	1.4±1.9	1.4±1.5	0.996

SD: Standard deviation

Table 3. The relationship of age quarters with Sports Motivation Questionnaire (SMQ), Children's Depression Inventory (CDI) and Screen for Child Anxiety and Related Disorders (SCARED) scores

	Age quarters					
	Q1 (n=164)	Q2 (n=57)	Q3 (n=46)	Q4 (n=18)	Total (n=286)	
Scale scores	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**	**Mean ± SD**	**p-value**
Amotivated	1.4±0.6	1.4±0.7	1.4±0.6	1.4±0.6	1.3±0.6	0.993
Extrinsic motivation	5.1±1.6	4.9±1.5	5.2±1.5	4.9±1.6	5.0±1.6	0.823
Intrinsic motivation	5.6±1.0	5.7±1.0	5.3±1.3	5.3±1.2	5.6±1.0	0.125
Self-motivation	4.8±1.7	4.8±1.7	4.5±1.7	4.3±1.6	4.7±1.7	0.482
Depression	8.5±4.9	8.5±4.5	8.1±5.4	7.4±2.5	0.8±0.2	0.789
Anxiety	20.6±11.7	21.8±11.0	20.7±10.9	20.7±10.8	21.0±11.4	0.920
Panic-somatic disorder	4.8±4.2	4.5±4.3	4.4±3.1	3.9±3.7	4.6±4.0	0.796
Generalized anxiety	4.3±3.3	4.7±3.3	4.0±3.2	4.4±3.4	4.3±3.3	0.706
Separation anxiety	4.7±2.9	5.2±2.8	4.7±3.3	4.9±3.0	4.9±3.0	0.746
Social anxiety	5.5±2.8	5.8±3.1	6.1±3.0	5.9±2.8	5.7±2.9	0.565
School phobia	1.3±1.6	1.6±1.4	1.5±1.3	1.4±1.8	1.4±1.5	0.785

SD: Standard deviation

0.930, p=0.012), while other family members playing football increased the SCARED score regardless of other variables (OR: 1.783, CI=1.039-3.060, p=0.036).

Discussion

Adolescent male candidates aiming to be elite football players are confronted with some factors that can increase many psychological stresses, such as the development of sports-specific skills, the development of techniques, and the frequency and intensity of training at this age period.[18] These factors may increase the symptoms of anxiety or depression and may be affected by the athlete's motivation, adolescence, and age. Nixdorf et al.[19] found that young athletes may experience symptoms of anxiety and depression which may be missed by adult observers and this stimulated a call for a more prevention focused approach to identify high risk athletes. Compared with non-athletes, adolescent athletes must cope with high levels of physical exhaustion resulting from at least 2-3 hours of deliberate daily training in sports, as well as the pronounced psychological stress related with the elemental win-loss dichotomy of talent selection in high-performance sports.[20] However, depression scores among athletes were found to be lower than community-based healthy groups when evaluated according to cut-off scores.[21] Here, we can also say that although participating in sports is probably a protective factor for depression, it has a negative effect on anxiety. In a recent study, it was reported that rates of consultation with sport psychiatrists due to mental problems increased gradually according to age among athletes aged 8-18 years. This result was interpreted as reflecting both the effects of motivation and familial variables in earlier participation in high performance sports such as football and the toll such participation affected on children.[22]

A football player in a football team constitute the smallest and most important performance unit. The physical abilities, psychological characteristics of the football player, and the ability to interact and communicate within the team form the core of the team's performance. However, the amount of training necessary to develop elite-level football skills ensuring success if practice was started in early development has long been debated. Early diversification provides the young athlete with valuable physical, cognitive, and psychosocial environments, and promotes motion.[23] A survey study of elite young athletes (Training of Young Athletes Study) revealed that parents were the strongest influence on the initiation of sport, while coaches were the strongest influence on their decision to perform intense training.[24] Thus, parents represent a key component of the social climate as they play a vital role in early sports initiation, where they are responsible for introducing children to their chosen sport and providing ongoing support. Parental support can include financial costs and transport, socio-emotional support, informational support, and companionship.[25] Hence, this study also showed that the status of family income affects both the age of sports initiation and the age of starting amateur football.

The higher education and socio-economic levels of the family also give the children advantage in terms of early starting to sports, testing different sports, and choosing the right sports. However, low-income families should also be conscious of the beneficial effects and be encouraged to direct their children to sports. Parental support has been linked with a range of important positive behavioral and psychological outcomes in youth sports. As a result, children/adolescents who perceive their parents to be more supportive tend to experience greater enjoyment, intrinsic motivation, and are more likely to continue participating in sports.[26] The intensity of motivation impacts the quality of learning and performance because it determines how efficiently the potential capacities are used. A child on Q1, performs better than a peer at other quartiles. This initial performance advantage is likely to increase extrinsic and intrinsic motivation to continue involvement in sports.[27] Adolescents who are particularly sensitive to social influences can be presumed to show major differences in sports motivations in different cultures. In our study, extrinsic motivation was higher for adolescents beginning age of any sports ≥10 years old compared to those starting <10 years old.

In the literature, the Q1 has more advantages when the time of selection compared to those born at the end of the year because physical, physiological, and psychological development is more advanced in the former.[27] In our study, we found that the number of Q1s invited to national team selection was higher than the other age quartiles; however, we could not find any significant differences between age quartiles, chronological age, and SMS, CDI, and SCARED scores.

Sports attrition rates may be highest during the adolescence period, when outside influences have the most impact. Thus, Anderson et al.[28] stated that as parental pressure increased, children's enjoyment of sports and motivation to continue practicing decreased. In this study, it was also seen that the motivation score increased with increasing family income, while the level of parental education decreased the level of extrinsic motivation. Those results may underline the influential effects of parental attitudes on sporting experiences of their offspring. The motivation in sports can also affect the athlete's mood. In this respect, it was found that motivation of the adolescent male football players increases the risk of depression. Children with depressed mothers have been found to be at a greater risk of developing various behavioral problems and psychopathology.[29] However, a negative correlation between family income levels and separation anxiety was found. Separation anxiety and its general impairment decrease with age. It is also stated in the literature that low family income is predominantly a risk factor for anxiety disorders.[30] However, having another athlete in the family may be a risk factor for anxiety. In this study, it was found that another individual who plays football in the family has increased the SCARED score in an adolescent male footballer. This finding suggests that social relationships with social figures are complex, and there is a need to further investigate how distinct profiles of social relationships are associated with sports participation.

Study Limitations

Lack of evaluations for objective measures of sexual development (i.e., Tanner stages) among participating adolescents may be a limitation. We know that the Tanner stages may affect mental problems related to the psychosocial development process. Moreover, the lack of a semi-structured/structured or a psychiatric interview to distinguish psychopathology in these children, and the fact that the study was conducted using self-report scales are some other limitations. The first quartile of the 13 and 14 years was included in the same group as Q1 because of the all 14 years was Q1 and this could affect the comparison of the age differences. Lastly, our results may not be valid for female adolescent athletes as well as adolescents participating in sports other than football.

Conclusions

Anxiety disorders and depression are common conditions in the community and require early intervention with their developmental, psychological, and psychopathological complications. The maintenance of these disorders in adult life can be prevented by early diagnosis, identification of risk factors, and early treatment programs. An adolescent football player needs to be strengthened in sports motivation and must be protected from the psychological disorders that can affect the professional football life and sports motivation. Similar scientific research should be performed in also middle and late adolescent male football players. It should be remembered that early success is no guarantee of later success in adolescent athletes and normative developmental needs of children and adolescents should also be borne in mind along with ensuring sports performance.

Ethics

Ethics Committee Approval: This study was approved by the Clinical Research Ethics Committee of İstanbul University Faculty of Medicine with the approval number 287 (date: 13.03.2017).

Informed Consent: Written consent was obtained from all participants and guardians.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Concept: R.D., A.G.K., B.T., M.Ş., S.D., B.B., Design: R.D., A.G.K., B.T., M.Ş., S.D., B.B., Data Collection or Processing: R.D., A.G.K., B.T., M.Ş., S.D., B.B., Analysis or Interpretation: R.D., A.G.K., B.T., M.Ş., B.B., Literature Search: R.D., A.G.K., S.D., B.B., Writing: R.D., A.G.K., B.B.

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