AYNI YAŞ KATEGORİSİNDE FARKLI BAŞARI SEVİYESİNDEKİ ADOLESAN ERKEK FUTBOLCULARIN LİG PERFORMANSLARININ KARŞILAŞTIRILMASI

RAZİYE DUT[1]
BERNARD TAHİRBEGOLLİ[2]
BÜLENT BAYRAKTAR[3]

ÖZ

Futbolda yetenek seçimi biyolojik maturasyon farklılıklarının olduğu adolesan döneme denk gelir. En iyi profesyonel oyuncu adayını desteklemek için erken yaşlarda performans değişkenleri ile analiz yapılmaktadır. Bu çalışmada; adolesan futbolcuların bireysel lig performansları milli takım seçmelerine davet edilen ve edilmeyenler arasında değerlendirilmiştir. Toplamda 2050 adolesan erkek futbolcu retrospektif olarak incelendi ve milli futbol takımı seçmelerine davet edilen 213 oyuncu ile karşılaştırıldı. Oynanan toplam maç sayısı, aktif oynanan toplam dakika, atılan gol sayısı, alınan sarı ve kırmızı kart sayıları değerlendirildi. Ortalama yaş 13.1±0.6 (12-14) ve çoğunluk 2003 doğumlu idi. Kampa davet edilenlerin sayısı birinci yaş çeyreğinde (Q1) n=122 (57.3%) ve 14 yaşında n=90 (42.3%) fazla idi. Davet edilen grupta oynanan maç sayısı, toplam oynanan süre, gol sayısı daha yüksekti ($p<0.001$). Genelde maç sayısı, gol sayısı, toplam oynanan süre Q1 grubunda fazla olmasına rağmen ($p<0.001$), davet edilen grupta bu sonuçlar görülmedi ($p>0.05$). Futbolda birinci yaş çeyreği yetenek seçimi için avantaj olduğu görüldü. Ancak bu avantaj milli takım kampına seçilen grup içerisinde kaybolmakta iken davet edilmeyen grupta devam etmektedir.

Anahtar kelimeler: Adolesan, Futbol, Performans, Yetenek

COMPARISON OF LEAGUE PERFORMANCES OF ADOLESCENT MALE FOOTBALL PLAYERS WITH DIFFERENT ACHIEVEMENT LEVELS IN THE SAME AGE CATEGORY

ABSTRACT

Talent identification in football corresponds to the adolescent period which with biological maturation differences. To support the best professional player candidate, performance variables are analyzed at an early age. In this study, individual league performances of adolescent football players were evaluated among those who were invited and non-invited to choose the national team. 2050 adolescent male football players were retrospectively studied and compared with 213 players who were invited to the national football team camp. The total number of games played, total minutes played, number of goals scored, and the number of yellow and red cards received were evaluated. The aged was 13.1±0.6 (12-14) and mostly was born in 2003. Among those invited to the camp mostly was the first birth quartile (Q1) n=122 (57.3%) and14years old n=90 (42.3%). The game number, total playing minutes, goal scored was higher in the invited group ($p<0.001$). Generally, although game number, goal score, total minutes played were higher in the Q1 group ($p<0.001$), it was not shown in the invited group ($p>0.05$). It was seen that there is an advantage for the first age quarter talent selection in football. However, while this advantage disappears within the invited group for the national team camp, it continues in the non-invited group.

Keywords: Adolescent, Soccer, Performance, Talent

[1]Istanbul Education and Research Hospital, Department of Pediatrics, Turkey, raziyemektup@yahoo.com
[2]Heimerer College, Vocational Field Nursing, Professional Education in Health, Kosova, bernardtahirbegolli@gmail.com
[3]Istanbul University, Faculty of Medicine, Department of Sports Medicine, Turkey, bulent.bayraktar@gmail.com

INTRODUCTION

Throughout the world, the overall popularity, as well as the importance of football, has been extremely high and this continues to increase as time goes by. Those who succeed and play at the highest level are either identified and chosen by a top club at an early age or have demonstrated their ability playing at a lower level. Many players that show early potential only have brief stays in the professional game, but the most successful players can have professional careers lasting about 15 years, typically between the ages of 20 and 35 (John, 2002). In this process, the football players that are both talented and have been guided well get invited to the national team camps and take the first steps in becoming a professional player. The classification of young footballers includes the age range of 9-18 years. In this range, early maturing soccer players can perform better than late maturing players (Reilly T., 2003).

Cognitive perceptive skills such as anticipation or decision making may also be of importance in talent identification and development in football (Vaeyens, et al., 2008). Despite the difficulties in predicting long-term success in young football players, talent identification programs are currently thriving in professional football clubs and national associations on a worldwide basis (Reilly, et al., 2000). We believe that performing more hours in football-specific game activity is one of the essentials to identify talented football players reliably and to invite the national team camp support distinct from non-invited players. And to evaluate youth football players, chronological age, skeletal age, pubertal stages mostly analyzed but this study is about selection diversity and reliability of talented football players across on league performance to evaluate how many talented football players identify according to match performance. The article aims to discriminate a few football-specific performance predictors; (a) different adolescent age category but same adolescent development status, (b) same age category but different birth quartiles, (c) same age category but different levels (invited/non-invited to national team selection), and makes recommendations for match and performance data interpretations in youth football player to aware of some strong and weak points in the developmental league.

MATERIAL and METHODS

This is a retrospective and descriptive study. The data of 2050 adolescent male football players with official records between September 2016 and February 2017 were analyzed. In each competition, league performances; total played game

number, time as minutes, goal score, yellow cards, red cards recorded on computer environment were analyzed by license number. The ethical approval of the study was taken from the Istanbul University Istanbul Medical Faculty Ethics Committee with the number 2017/204.

Participants

The study included male adolescents aged 12-14 years. The data of 213 football players who were invited to the Turkish football national team were compared with their 1837 non-invited peers in the same age category. The players were located to quartile 1 (Q1) if born between 1st of January – 31st of March, to quartile 2 (Q2), if born between 1st of April – 30th of June, to quartile 3 (Q3), if born between 1st of July – 30th of September, and to quartile 4 (Q4), if born between 1st of October – 31st of December (Praxedes, et al., 2017).

Statistical Analysis

Data were summarized as n and percentage or median and interquartile range. The Chi-Square test was used to compare groups. The Mann-Whitney U test or Kruskal-Wallis test was used to determine differences between groups. Univariate and multivariate regression analyzes were performed to analyze the factors that could affect the selection to the national team camp. $p < 0.05$ was considered statistically significant. Statistical analysis was performed using the SPSS v21 package program.

RESULTS

The study included 2050 male soccer players aged 12-14 (13.1±0.6). There were 1737 (84.7%) players who were born in 2003 and 313 players (15.3%) who were born in 2004. In the group of players who were born in 2003, 1210 (69.7%) were in the 13-years' age group, and 527 (30.3%) were in the 14-years' age group. Of the players born in 2004, 209 (66.8%) were in the 12-years' age group, while 104 (33.2%) were in the 13-years' age group. In total, there were 209 players (10.2%) in the 12-years' age group, 1314 players (64.1%) in the 13-years' age group and 527 players (25.7%) in the 14-years' age group. Demographic characteristics of the study population are shown in Table 1. None of the players from the 12 years' age group were invited to the camp. There were 123 players (57.7%) from the 13-years's age group and 90 players (42.3%) from the 14-years' age group selected to the national team camp ($p < 0.001$). The median age of the invited and non-invited players, was 13.4±0.5 (13-14) and 13.1±0.6 (12-14) years, respectively. Among those invited to the camp the proportions for Q1, Q2, Q3, and Q4 were 57.3% (n=122), 23.0% (n=49), 14.1% (n=30), and 5.6% (n=12), respectively and among the non-invited ones 39.8% (n = 732), 26.3% (n = 484), 21.7% (n = 399), and 12.1% (n=222), respectively ($p<0.001$). Most of the players

invited to the camp (51.6 %, n=63) were born in January (Q1), followed by April (Q2) (44.9%, n=22), July (Q3) (40.0%, n=12), and November (Q4) (50.0%, n=6). On the other hand, most of those players non-invited to the camp were born in January (Q1) (51.9%, n=380), followed by April (Q2) (31.8%, n=154), July (Q3) (36.6%, n=146), and October (Q4) (37.4%, n=83). Of the invited players, 80.3% (n=171) were born in the first half of the year, while 19.7% (n=42) were born in the second half of the year (Table 1).

Table 1. Demographic characteristics of the participants.

Variables	**Invited***		**Non-invited***		**Total**	
Age Quartile	**n**	**%**	**n**	**%**	N	%
Q1	122	57.3	732	39.8	854	41.7
Q2	49	23.0	484	26.3	533	26.0
Q3	30	14.1	399	21.7	429	20.9
Q4	12	5.6	222	12.1	234	11.4
Month of Birth						
January	63	29.6	380	20.7	443	21.6
February	30	14.1	174	9.5	204	10.0
March	29	13.6	178	9.7	207	10.1
April	22	10.3	154	8.4	176	8.6
May	9	4.2	157	8.5	166	8.1
June	18	8.5	173	9.4	191	9.3
July	12	5.6	146	7.9	158	7.7
August	10	4.7	135	7.3	145	7.1
September	8	3.8	118	6.4	126	6.1
October	3	1.4	83	4.5	86	4.2
November	6	2.8	82	4.5	88	4.3
December	3	1.4	57	3.1	60	2.9
League Performance**						
Game count	14.4	(1-20)	10.2	(1-20)	10.6	(1-20)
Total minutes played	1142.3	(44.0-1800.0)	680.4	(9.0-1800.0)	728.4	(9.0-1800.0)
Yellow card	1.1	(0-7)	0.5	(0-10)	0.5	(0-10)
Red card	0.0	(0-1)	0.0	(0-2)	0.0	(0-2)

**Invited n=213 (10.4%), Not invited n=1837 (89.6%). **=Median (min-max) values of league performances are given.*

League Performance

At the 14 years old age group league, specific performance materials were different than the others. League performances according to the age groups are shown in Table 2.

Table 2. League performances according to age groups

	Age Groups						
League performances*	12 (n=209)		13 (n=1314)		14 (n=527)		**p**
Game count	7.8	(1-20)	10.5	(1-20)	12.1*	(1-20)	<.001
Goals scored	0.5	(0-9)	1.4	(0-24)	2.4 *	(0-31)	<.001
Yellow card	0.2	(0-4)	0.5	(0-10)	0.8	(0-9)	<.001
Red card	0.0	(0-1)	0.0	(0-2)	0.0	(0-1)	.003
Total minutes played	465.1	(9.0-1530.0)	714.8	(13.0-1800.0)	866.8*	(18.0-1800.0)	<.001
Minutes played in a game	54.1	(9.0-90.0)	62.1	(13.0-90.0)	67.6*	(18.0-90.0)	<.001

**=Median (min-max) values of league performances are given.*

League performances according to age quartiles are shown in Table 3.

Table 3. Age quartiles and league performances.

League performance*	Q1 (n=854)	Q2 (n=533)	Q3 (n=429)	Q4 (n=234)	p
Game count	11.4 (1-20)	10.4 (1-20)	9.9 (1-20)	9.6* (1-20)	<.001
Goals scored	2.1 (0-31)	1.3 (0-24)	1.0 (0-18)	0.9* (0-21)	<.001
Yellow card	0.7 (0-9)	0.5 (0-10)	0.4 (0-6)	0.3* (0-8)	<.001
Red card	0.0 (0-2)	0.0 (0-2)	0.0 (0-1)	0.0 (0-1)	.001
Total minutes played	810.5 (18.0-1800.0)	697.5 (20.0-1800.0)	660.5 (13.0-1710.0)	623.8 (9.0-1800.0)	<.001
Minutes played in a game	66.2 (18.0-90.0)	61.2 (16.0-90.0)	59.0 (13.0-90.0)	60.0 (9.0-90.0)	<.001

**=Median (min-max) values of league performances are given.*

Except for total red card counts, there were differences between invited and non-invited groups. Performance analyzes of invited and uninvited players are shown in Table 4.

Table 4. League performances of invited and non-invited players.

League performance	Total (n=2050)	Invited (n=213)	Non-invited (n=1837)	p
Played game count	10.6 (1.0-20.0)	14.4* (1.0-20.0)	10.2 (1.0-20.0)	<.001
Total minutes played	728.4 (9.0-1800.0)	1142.3* (44.0-1800.0)	680.4 (9.0-1800.0)	<.001
Goals scored	1.5 (0.0-30.0)	5.2* (0.0-31.0)	1.1 (0.0-25.0)	<.001
Yellow card count	0.5 (0.0-10.0)	1.1* (0.0-7.0)	0.5 (0.0-10.0)	<.001
Red card count	0.0 (0.0-2.0)	0.0 (0.0-1.0)	0.0 (0.0-2.0)	.236

**=Median (min-max) values of league performances are given.*

In the first half of the league, it was seen that those who were invited to the camp played an average of 78.7 minutes for each match, and those who were not invited to the camp averaged 60.8 minutes, giving a statistically significant difference (p <0.001). In the league matches, one of the five players who were invited to the national team selection camp scored 1 goal, while the ratio was one goal per 10 players in the non-invited group. Also, in the games played by the invited participants, one goal was scored in 2.77 matches, while one goal was scored per 8.78 games of the non-invited players. The athletes who were not invited to the camp scored 1 goal every 581.28 minutes, while the invited scored 1 goal every 218.82 minutes. The league performances according to the age quarters of those who are invited and those who are not are shown in Table 5.

Table 5. League performances according to the age quarters and invitation status.

League performances*	Invitation status	1st Quarter (n= 854)	2nd Quarter (n=533)	3rd Quarter (n=429)	4th Quarter (n= 234)	p
Game count	Invited	14.7 (1.0-20.0)	14.2 (2.0-19.0)	13.5 (2.0-19.0)	15 .0 (3.0-20.0)	.516
	Non-invited	10.9(1.0-20.0)	10.0 (1.0-20.0)	9.7 (1.0-20.0)	9.3 (1.0-20.0)	<.001
Minutes played	Invited	1162.3 (44.0-1800.0)	1111.3(180.0-1710)	1093.2 (102.0-1600.0)	1189.0 (225.0-1710.0)	.782
	Non-invited	751.8 (18.0-1800.0)	655.6(20.0-1800.0)	628.0 (13.0-1710.0)	593.2 (9.0-1800.0)	<.001
Yellow card	Invited	1.2 (0.0-7.0)	0.8 (0.0-7.0)	1.2 (0.0-6.0)	0.7 (0.0-2.0)	.393
	Non-invited	0.6 (0.0-9.0)	0.5 (0.0-10.0)	0.3 (0.0-5.0)	0.3 (0.0-8.0)	<.001
Red card	Invited	0.0 (0.0-1.0)	0.0 (0.0-1.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	.137
	Non-invited	0.0 (0.0-2.0)	0.0 (0.0-2.0)	0.0 (0.0-1.0)	0.0 (0.0-1.0)	.012
Goal count	Invited	5.7 (0.0-31.0)	4.9 (0.0-24.0)	3.8 (0.0-18.0)	4.6 (0.0-21.0)	.306
	Non-invited	1.6 (0.0-25.0)	1.0 (0.0-2.0)	0.8 (0.0-12.0)	0.7 (0.0-9.0)	<.001

**=Median (min-max) values of league performances are given.*

A multivariate regression analysis was conducted to check the independent effects of the

variables “total minutes played,” “yellow cards awarded,” “goals scored,” and “the age quartiles” on the invitation status. It was found that the number of minutes played and the number of the scored goals was positively influential while being in the Q4 age quartile was a disadvantage compared to the Q1 quartile; the number of yellow cards received was not significant (Table 6).

Table 6. Regression analysis computer output.

Variables	Exp(B)	95% CI for EXP(B) Lower	Upper	p
Total minutes played	1.001	1.001	1.002	<.001
Yellow cards awarded	0.990	0.873	1.123	.877
Goals scored	1.168	1.125	1.212	<.001
Q2	0.827	0.564	1.212	.329
Q3	0.679	0.434	1.062	.090
Q4	-0.510	0.267	0.972	.041

DISCUSSION

Football players in the age range of 9-18 years are defined as young footballers (Reilly T., 2003). Almost all boys have the opportunity to play soccer at some time, and those with aptitude or enthusiasm will play for their school or local team. Tactical and technical skills of players’ physical growth, biologic maturation, and motor performance are essential to discriminate between selected and non-selected youth football players (Aquino, et al., 2017). Performance in football can be evaluated in two ways: player and team performance. Football team performance is analyzed in five categories: a) goal attempts, b) passing, c) defending, d) crossing, and e) discipline (Oberstone, 2009). Scoring goals are the ultimate determinant of a successful soccer team (Baxter-Jones, Maffulli, & Group, 2003). And According to the basic rules of football, the team that scores the most goals wins (Caliedo M., 2006). In this study, we evaluated player performances. It should not be forgotten that individual player performances combine to transform the team performance into a collective strength (Thomas, 1995). Personal development and health conditions, anthropometric and psychological characteristics, motor skills, technical-tactical abilities, and trainers equipped with the necessary information are suggested in the discovery, orientation and training of children and young people as performance athletes (Küçük, 2009). We are of the opinion that paying attention to the differences in developmental speed will ensure fairer and healthier talent selection. In this study, we examined football-specific league performances according to the ages, age quartiles, and status of the adolescent male football

players invited to the national team selection camp. Three types of players become prominent in the football development leagues: players with maturations ahead, appropriate for, and behind their chronological ages. Apparently, players with their biological age ahead of the chronological age are advantaged. However, this reality becomes a big disadvantage for talented players who fall behind their chronological age. As motor skills are already developed in adolescents with developments ahead or appropriate for their chronological age, they can focus on developing technical and tactical skills. We believe that this difference can be compensated by considering the biological age together with the chronological age in the selection process of the 12-16-year-old players, which will contribute to decreasing the temporal age fluctuation in the academy leagues. Kirkendall et al. (Kirkendall, Shen, & Gan, 2014) determined in their studies that while the relative age effect (RAE) was significant in the first quartile, the average team age in the U11 group did not significantly affect the match results. They also emphasize that it is important to make the selection of the athletes based on the performance of the athlete rather than the maturation. Generally, puberty starts at 11 years old and ends at 16 years old. But the adolescent stage starts at 10 years old and end at 22 years old or later. Puberty is inclusive of with physical and biological growth on the body. But the adolescent stage inclusive growth into maturation with biopsychosocial development. At 11-16 years old period is characterized by with growing height and weight. But especially 2-3 years in that period-specific for individuals as peak height velocity. For males, peak height velocity time is nearly cross at 13-14 years old and so which explain that 14 years old players performances the criteria were higher than others. We found that the league performances of the 14-years-old footballers were significantly higher than those of the 12 and 13-years-old players. Initial classification between late, timely, and early maturing players within the same age category is a valuable method to ensure equitability, which has been proven in football studies (Figueiredo, et al., 2009).

Having confirmed no difference between the age quartiles and league performances of the talented footballers selected among their peers, our study supports the idea that early maturation is not always associated with better performance (le Gall, et al., 2010). However, in the non-invited group, we found that the Q1 performance scores were higher than that of the other age quartiles. These results indicate that the RAE effect is lost in the selected players, but the risk continues for the unselected adolescents.

Another remarkable finding in our study is that the number of yellow cards received in the invited group was more than the non-invited group, but there was no difference concerning the number of red cards. This result may be explained by the fact that although the skilled and quick players are highly talented, they have a risk of common dual struggles, which can be harmful to the team (Küçük, 2009; Tiryaki, 1992). The same comment can be made for the higher number of yellow and red cards in the Q1 group compared to the other age quartiles. Both card awards are given for behaviors not compatible with fair-play, showing the importance of developing and consolidating the self-control skills of the athletes.

Competitions and training, in which the performance of the players are evaluated as integral to the football infrastructure (Cummings CM, 2014) because football is no more a simple foot game; it has become a complex sport, where tactics and intelligence are combined with skills.

Adolescent male football players in the same age group may have diverse abilities and variability in biological maturation, which influences talent selection (Malina, 2010). Studies are needed to demonstrate the advantages and disadvantages of grouping adolescent football players according to biological maturation.

Limitations

Lack of field-performance evaluation is a limitation of this study. Evaluating league performances along with field positions will provide a better judgment of the players and teams. Another limitation is that football specific league performance differences cannot be evaluated together with biological maturation diversity.

CONCLUSIONS

In this study, we demonstrated the general profile characteristics of adolescent male football players who entered the selections for joining the national football team camp. Invited athletes had better league performances than non-invited ones and age effect is eliminated while to select right talent player. But also advantages according to biologic maturation would be persisted at non-selected talent players.

Practical Applications

To select talented football players reliably can be improved by increasing the number of matches, and the total duration played, and by decreasing negative characteristics such as the yellow and red card awards. The results of this study should be extended comparing young footballers from different countries.

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