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# PERFORMANCE PROFILES OF NATIONAL AMERICAN FOOTBALL PLAYERS OF TURKEY

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**Abstract**
**Objective:** This study was done to assess the current performance of American Football Team of Turkey which was established for the first time in our country and to follow the improvement in their performance.
**Method:** Participants in this study were American Football players who have been training 3 times a week, have the average body mass, height and age of 95.84±18.02 kg, 180.62±5.93 cm, 24,6±3.8 years respectively. To assess the performance of these athletes; BMI, %fat percentage, 1RM Bench Press, vertical jump height, anaerobic power, 20 and 40 yard speed test and pro shuttle tests were applied.
**Results:**The results for Bench Press 1RM, vertical jump, anaerobic power, 20 yard and 40 yard speed test and pro shuttle test were: 95.18±19.99 kg. (Offense 94.39±21.63 kg, defense 96.02±18.40 kg), 51.43±8.38 cm (offense 52.41±9.76 cm, defense 50.44±6.72 cm), 150.52±24.00 kg.m/s (offense 149.60±24.87 kg.m/s, defense 151.43±23.43 kg.m/s), 3.25±0.28 sec. (Offense 3.21±0.34 sec., defense 3.28±0.19 sec.), 5.59±0.41 sec. (Offense 5.54±0.45 sec., defense 5.65±0.37 sec.) and 5.33±0.33 sec. (Offense 5.31±0.35 sec., defense 5.34±0.32 sec.) respectively.
**Discussion and Conclusion:** There was not a statistically significant difference between defense and offense players in terms of variables ($p>0.05$) but values for Bench Press 1RM, vertical jump and 40 yard speed tests were much lower than the values of NCAA (National Collegiate Athletic Association) athletes. It has been recommended to increase the number of training days per week to obtain a desirable level of success and performance enhancement.
**Keywords;** American football, National Team of Turkey, Performance status

## 1. Introduction

American Football has the highest number of spectators in the United States. In our country, especially University students are interested in this sport.

This game requires fast pace, intensity and contact which makes this unique sport appealing.

Studies on the psycosocial status of American football players in our country have been shown that university students are interested in this sport to socialize in the society.

A team is made up of 46 players and students who got accepted in the team becomes popular. Also, wearing the team's t-shirts and jackets becomes a tool to send messages of popularity (T. Alparslan, E. Kılcıgil, 2005).

In American football, a team is made up of three sub-teams all of which have different specialties. These sub-teams are named as

offensive team, defensive team and special team.

The defensive team is made up of noise tackle, defensive end, defensive tackle, linebackers, corner backers and safety players.

The offensive team is made up of; quarter back, center, tight end, running back and wide receiver (R. Thomas, N. Sescher, P. Snell, C. Williams, 1990) Speed, strength, power, agility and quickness are the coordinative and conditional characteristics which have major effects on success in the American Football.

Although a game lasts 3 hours, energy metabolism used in American Football is alactic-anaerobic (J.R. Hoffman, 2008; R. Thomas, N. Sescher, P. Snell, C. Williams, 1990). Unfortunately, there are no sufficient number of studies which examines the American Football in our country.

The data which we obtained from the first camp of our National team will contribute to the development of this sport.

Because of the position of National American Football team in Turkey, assessing the performance and contributing to the follow up of the improvement of performance is the aim of our study.

## 2. Methods

### 2.1. Subjects

Sixty-eight American footballers, with a

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game experience of 4.5±0.59 years (min. 3.00 years and max. 6.00 years), voluntarily participated in our study. The avarage age, height and body weight of the players were 24,6±3.8 years, 180.62±5.93 cm and 95.84±18.02 kg respectively. The measurements were performed in the sports facilities of Kırkpınar Physical Education and Sport

Academy during the training camp of National American Football Team in Edirne (August, 2009). The players were informed about the tests and their written consents were taken.

### 2.2. Experimental Design

#### 2.2.1. Field Tests:

Twenty yard sprint (18.28m), 40 yard (36.58m) and pro shuttle tests were applied in grass field according to the nature of the game. Test results were taken by using 3 separate chronometers (DigiSport) and average values were recorded as performance times.

#### 2.2.2. Indoor Tests:

Long jump, Vertical jump, Anaerobic Power, % fat and 1RM bench press test were applied.

#### 2.2.3. Long Jump Test:

It was done at the Olympic sports hall and distances were measured by using a tape measure (Meter.JC.GJ509, Made in PRC.)

#### 2.2.4. Vertical Jump Test:

It was measured by using a vertical jump-meter (Takei Physical Fitness Test, T.K.K.5106, Made in PRC).

Player's scores were measured twice in standing long jump and vertical jump test and average values were recorded as vertical jump (cm.) and long jump distance (cm.)

#### 2.2.5. % Fat Assessment:

Triceps, subscapul, suprailiac and abdomen of players were measured by using a 0.2 mm sensitive skinfold caliper (Holtain Ltd.CRYMYCH, Made in U.K.).

Yuhazs' formula was used to determine the percentace of fat.

#### 2.2.6. Anaerobic Power:

The anaerobic strength levels of the athletes were calculated by using (P= (√4.9 (body weight) √D) formula which is based on the relation between body weight and vertical jump height. Vertical Jumping test was applied to determine the height of vertical jump.

Body weight was calculated in kilograms and D=jumping height in meters.

#### 2.2.7. 1RM Bench Press Test:

Players repeated the bench press as much as they could with a certain weight and Boyd Epley equation was used to determine the 1RM = (0.033 x number of repetitions) x (weight lifted) + weight lifted

### 2.3. Statistical Analyses

We performed a classical statistical analysis to examine the differences in the distribution of variables between players who were either defense or offense.

Kolmogorov Smirnov test was used to assess the normality of numeric variables. Number of training per week was tested with Mann Whitney U test because the distribution of this variable was non-normal and descriptive statistic was expressed as median (25%-75%), but the other variables were tested by independent samples t test and descriptive statistics were expressed as mean ± standard deviation (SD).

## 3. Results

There was no statistically meaningful difference between measured variables of offensive and defensive players of National American Football team ($p > 0.05$). (Table I, II )

**Table I: Data Obtained from the National Team Players of American Football in Turkey**

| Variables | Descriptive Statistics |
|---|---|
| BMI(kg/m$^2$) (n=68) | 29.24±4.67 |
| % Fat (n=68) | 18.37±4.33 |
| Number of Training per Week (n=52) | 3 (3-5) |
| Bench Press 1 RM (kg) (n=66) | 95.18±19.99 |
| Vertical Jump (cm) (n=68) | 51.43±8.38 |
| Standing Long Jump (cm) (n=68) | 206.17±24.10 |
| Anaerobic Power (kg.m/sec) (n=68) | 150.52±24.00 |
| 20 Yard Speed Run (sec) (n=66) | 3.25±0.28 |
| 40 Yard Speed Run (sec) (n=68) | 5.59±0.41 |
| Pro Shuttle Test (sec) (n=66) | 5.33±0.33 |

**Table II: Comparison the Results of Offensive and Defensive Players**

| | $n_{defense}$ | Defense | $n_{offense}$ | Offense | p |
|---|---|---|---|---|---|
| Age (year) | 34 | 25.2±4.1 | 32 | 24.1±3.3 | 0.233 |
| Height (cm) | 34 | 181.71±5.56 | 34 | 179.53±6.17 | 0.131 |
| Body Weight (kg) | 34 | 97.21±18.17 | 34 | 94.47±18.03 | 0.535 |
| BMI (kg/m$^2$) | 34 | 29.30±4.60 | 34 | 29.18±4.81 | 0.918 |
| Bench Press-1 RM (kg) | 32 | 96.02±18.40 | 34 | 94.39±21.63 | 0.744 |
| Vertical Jump (cm) | 34 | 50.44±6.72 | 34 | 52.41±9.76 | 0.336 |
| Long Jump (cm) | 34 | 209.43±20.92 | 34 | 202.91±26.84 | 0.268 |
| % Fat | 34 | 17.67±3.30 | 34 | 19.07±5.11 | 0.186 |
| Anaerobic Power (kg.m/sec) | 34 | 151.43±23.43 | 34 | 149.60±24.87 | 0.756 |
| 20 Yard Speed Run (sec) | 33 | 3.28±0.19 | 33 | 3.21±0.34 | 0.308 |
| 40 Yard Speed Run (sec) | 34 | 5.65±0.37 | 34 | 5.54±0.45 | 0.275 |
| Pro Shuttle Test (sec) | 33 | 5.34±0.32 | 33 | 5.31±0.35 | 0.660 |
| Number of Trainings per Week | 31 | 3 (3-5) | 23 | 3 (3-4) | 0.244 |

**Discussion**

It is quite difficult to distinguish between body fat and fat free muscle mass with BMI which is used to determine the body composition.

The BMI and body fat ratios of the American football players were gradually increasing.

More than ¼ of these athletes were determined to have second degree obesity (BMI= 35-39.9) (B.H. Joyce, Hecth. L, 2005; W.J. Karamer, J.C. Torine, R.Silvestre. et al 2005). According to the BMI values, the players of our Natinonal American Football Team are overweight.

In American football, there is a strong relation between body fat ratio and the position of the athlete. While the avarage fat ratio for males is between 10% and 20%, well-trained endurance athletes have a ratio about 10% (P. Jansssen, 2001).

In accordance with these data, it can be said that our players have a normal avarage body fat ratio. In our country, the studies which aimed to determine the body compositions of American footballers have shown that the body fat ratios of American football players were normal (10%-20%) for both offensive and defensive players (F. Vural, G. Nalçakan, M. Z. Özkol, 2009).

The information from the literature draws attention to the fact that the body fat ratio of the offensive players are higher than the defensive players (W. J. Karamer, J. C. Torine, R. Silvestre. et al 2005).

According to the body fat percentage values which were acquired from our study, our offensive players have a higher percentage of body fat compared to the defensive players. This finding bears a resemblance to the data acquired from the literature.

Maximal strength is a major factor which effects performance to a great extent in many fields of sports (R.M. Michael, B.B. Jason, 2008). Bench Press 1 RM and Squat 1 RM tests are among the most widely applied tests with the aim of determining maximal strength ( J.M. McBride, D.Blow, T.J. Kirby,

T.L .Haines, A.M.Dayne, N.T. Triplet, 2009; R.M.Michael, B.W. Jason, 2008) NCAA (National Collegiate Athletic Association,) indicates that the Bench Press 1 RM Test values of American footballers are 123.9± 18.6 kg (Division III) - 145 kg (Division I) (J.R. Hoffman, 2008; R.M.Michael, B.W.Jason, 2008).

In our study, although no statistical significance was detected be tween the Bench Press 1 RM test results of offensive and defensive players, it is observed that the avarage Bench Press 1 RM Test values of both player groups are quite low compared to the NCAA players.

Vertical jump test is a simple and reliable test which is used for determining the strength and performance characteristics of athletes (R.M. Michael, B.W. Jason, 2008).

This test is especially used for determining the explosive strength production level of the lower extremity muscles (F.Vural, G. Nalçakan, M. Z. Özkol, 2009).

In a similar study carried out by Vural and his colleagues in our country (2009), the vertical jumping (VJ) value was determined to be 53.2 ± 8.1 cm for offensive players and 56.0 ± 7.2 cm for defensive players (F.Vural, G. Nalçakan, M. Z. Özkol, 2009). And VJ value in NCAA players is approximately 70 cm (A.C. Fry, 1991; R.M. Michael, B.W. Jason, 2008).

One of the most important factors effecting the performance in American Football is the strength levels of players.

Two studies about the strength levels of American Football players were published. Özkan and his colleagues (2009) calculated the anaerobic strength levels of American Footballers as 825.51 ± 133.97 W (maksimum strength) by Wingate Test (A. Özkan, B. Arıburun, A.Kin-İşler, 2009).

Vertical jump and anaerobic strength values which were calculated in connection with body weight were 135.92 ± 7.15 kg.m/s as published by Uğraş and Savaş (2004), similar to our study (A. Uğraş, S. Savaş, 2004). Speed is among the fundamental motor qualities which has to be trained in connection with the maximal strength and maximal anaerobic strength.

Twenty and Fourty yards sprint and pro shuttle agility tests were applied in order to determine the speed and agility qualities of our National American Football Team. It was observed that the 40 yard sprint test values of our players were lower than the values obtained from the NCAA players (A.C. Fry, 1991). In the literature, no data on 20 yard sprint test and pro shuttle agility test of American Footballers were found.

## 5. Conclusion

The excess fat tissue in the body has negative effects on strength, agility, anaerobic power and speed which have important effects on performance.

Our National teams' players were determined to have normal fat percentage, but 1RM bench press and 40 yard speed run scores were very low compared to NCAA players.

These results are thought to be related to the fact that this sports is quite new to our country and the number of training sessions of players in their own club per week is inadequate for a national level athlete (3 sessions / week)

Either to have a better overall health in the team or to have success on global scale our team has to improve on maximal strength, explosive strength and alactic-anaerobic power which are the general characteristics of this unique sport. It is necessary to set up more training sessions per week and to design training programs with the appropriate volume and intensity.

Training plan should also include aerobic sessions and should avoid commonly seen obesity in American Football players which is also known for its negative effects on performance and health.

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