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# Comparison Physical Attributes of Young Football Players with Their Playing Positions

*Genç Futbolcuların Fiziksel Özellikleri ile Oynadıkları Mevkilerin Karşılaştırılması*

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**Abstract:** The aim of this study is to examine the differences in height, weight, and body mass index values among young amateur football players according to their positions and try to put forth the significance of these differences in talent selection and in establishing a general anthropometric profile of a football team. A total of 121 youth football players from the Nevşehir U17 amateur league in Türkiye participated in the research, during which their body height, weight, and Body Mass Index (BMI) were measured. One factor Analysis of Variance statistical technique was used to identify differences related to player positions. When the study results were examined, goalkeepers obtained better values in the height variable compared to defenders, midfielders, and forwards. The lowest height values were found among midfield players, while defenders and forwards had similar values. In terms of weight variable, goalkeepers were found to have higher weight compared to players in other positions. Midfielders had the lowest weight among the groups. As for the body mass index variable, goalkeepers again reached the highest values, while midfielders had the lowest values. These findings indicate that the anthropometric characteristics of players at the U17 level vary depending on their playing positions. This observation suggests that the anthropometric features of players may differ based on the tactical aspects of the game. Football practitioners can leverage these study findings to gain a comprehensive understanding and interpretation of anthropometric characteristics and their implications for player positions. Furthermore, this knowledge can aid in providing tailored training programs aimed at evaluating and enhancing soccer-specific skills in relation to these factors. Awareness of these observed differences could also contribute to the early selection of promising players.

**Keywords:** Anthropometric characteristics; football; youth players.

***Özet:*** *Bu çalışmanın amacı, genç amatör futbolcuların mevkilerine göre boy, kilo ve vücut kitle indeksi değerlerindeki farklılıkları incelemek ve bu farklılıkların yetenek seçiminde ve bir futbol takımının genel antropometrik profilinin oluşturulmasındaki önemini ortaya koymaya çalışmaktır. Araştırmaya Türkiye'de Nevşehir U17 amatör liginde oynayan toplam 121 genç futbolcu katılmış ve bu futbolcuların boy, kilo ve Beden Kitle İndeksi (BKİ) değerleri ölçülmüştür. Oyuncuların mevkilerine sahip oldukları farklılıkları incelemek üzere yapılan istatistiksel analizde Tek yönlü varyans analizi tekniği kullanılmıştır. Çalışma sonuçları incelendiğinde, boy değişkeninde kalecilerin defans, orta saha ve forvet oyuncularına kıyasla daha iyi değerler elde ettiği görüldü. En düşük boy değerleri orta saha oyuncuları arasında bulunurken, defans ve forvet oyuncuları benzer değerlere sahipti. Ağırlık değişkeni açısından, kalecilerin diğer mevkilerdeki oyunculara kıyasla daha yüksek ağırlığa sahip olduğu görülmüştür. Gruplar arasında en düşük ağırlığa sahip olanlar orta saha oyuncularıdır. Vücut kitle indeksi değişkeninde ise yine kaleciler en yüksek değerlere ulaşırken, orta saha oyuncuları en düşük değerlere sahip olmuştur. Bu bulgular, U17 seviyesindeki oyuncuların antropometrik özelliklerinin oynadıkları mevkilere bağlı olarak değiştiğini göstermektedir. Bu gözlem, oyuncuların antropometrik özelliklerinin oyunun taktiksel yönlerine göre farklılık gösterebileceğini düşündürmektedir. Futbol uygulayıcıları, antropometrik özelliklerin ve bunların oyuncu pozisyonlarına etkilerinin kapsamlı bir şekilde anlaşılması ve yorumlanması için bu çalışma bulgularından yararlanabilir. Ayrıca bu bilgi, bu faktörlerle ilişkili olarak futbola özgü becerileri değerlendirmeyi ve geliştirmeyi amaçlayan özel eğitim programlarının sağlanmasına yardımcı olabilir. Gözlemlenen bu farklılıkların farkında olmak, gelecek vaat eden oyuncuların erken seçimine de katkıda bulunabilir.*

***Anahtar Kelimeler:*** *Antropometrik parametreler, futbol, genç oyuncular*

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## INTRODUCTION

Football is a big industry, and all the football clubs aim to get funds from this industry according to their shares. Growing young professional football players and selling them to bigger clubs is one of the biggest ways for the clubs to provide their annual budgets (1). This situation highlights that all football clubs should give more importance to their substructure. Football trainers have been discovered to choose young players depending on anthropometric attributes and body composition instead of technical and tactical performance (2). Considering the positions in football, the anthropometric characteristics have a positive or negative effect on technical and tactical performance. For example, the physical characteristics that a player playing in the central back position player should have been different from those of wingers. These characteristics are the things that will affect the performance expected from them. The speed performance of a tall and built footballer is lower than that of athletes with shorter height and different muscle structure. These differences will affect the reasons why footballers are preferred according to the positions they play.

Developing qualified footballers are generally require many common attributes such as flexibility, coordination, skill, agility, endurance, cardiovascular fitness, muscle strength, mental toughness, tactical knowledge and etc. besides anthropometric parameters such as body weight and height to become successful (3). Unfortunately, the player's Body Mass Index (BMI) is a generally ignored part in as an anthropological capability. Recent years, researchers became interested in determining BMI of these young football players (4,5). BMI is generally known as a measure that compares a person's weight to their height. It is computed by taking a person's weight in kilograms and dividing it by their height in meters squared (BMI, kg m-2) (6). BMI is a measure used globally to categorize individuals as normal, overweight, or obese (7). World Health Organization (WHO) (8), has reported that children from the ages of five to nineteen should be considered underweight (BMI <18.5 kg/m2), or overweight (BMI between 25 to <29.9 kg/m2), or obesity (BMI ≥ 30 kg/m2).

Attaining or preserving an ideal weight-to-height ratio holds significance within the realm of football. In this context, closely observing the body mass index (BMI) could aid in pinpointing a specific weight range appropriate for a given height. To exemplify, Bloomfield and colleagues recently explored the physical measurements of male football players from the top four European championships (Spain, England,

Germany, and Italy). Their findings revealed an average BMI of 23 kg/m² (±1 standard deviation), indicating that BMI fell within the range of 22 to 24 kg/m² for about 68% of these players (9). Such insights could serve as guidance for coaches and athletic performance trainers to establish weight objectives tailored to their football players. In contrast, no comparable investigation has been carried out among young football players. Furthermore, acquiring analogous details (average and standard deviation) regarding the BMI of young football players through existing literature is challenging, as most prior studies, with a few exceptions, do not present BMI data (10).

Meanwhile, studies have proven that BMI (weight – height proportion) had an essential indicator of anthropometric parameters in young football players (1,11,12). Masanovic et al, aimed to determine the anthropometric characteristics of the 77 young football players of different levels such as elite, sub-elite and control group. At the end of the study, significant differences were found among the groups, and when examined in terms of BMI, it was determined that the group possessing the desired data consisted of elite group football players. These findings also indicate that in order to reach the targeted points in football, it is necessary to achieve ideal or close-to-ideal anthropometric levels. In the study, we worked on male youth football players but Lesinski et al, has showed that importance of anthropometric measures is same for female youth football players too. They have studied with 17 healthy female elite football players aged 14-16 years to explore the football training relation with body composition and physical fitness level. Results have suggested that football training was related with important differences in anthropometry, physical fitness, and body composition results among elite young female players (12). In this regard, it's well-known that high performances are possible under the conditions of a well-planned training process. Moreover, high-quality training must have been considered according to players' attributes and the structure of specific anthropological capabilities (13).

Another perspective is the impact of anthropometric measurement values on football players' injury rates. The results of numerous studies examining the relationship between injury risk and BMI show that football players with higher BMI scores are at a greater risk of injuries compared to athletes with lower scores. Due to carrying more weight, football players with higher BMI scores have higher rates of joint, ligament, knee injuries, etc. Additionally, lower BMI players, on the other hand, may be more exposed to fractures and other impact-related injuries because their bodies need enough muscle mass and bone density for endurance physical activity (14). Meta-analyses showed that young players with any sport-related injury had a higher BMI and youth with a bone stress injury had a lower BMI than non-injured ones (15). Talented football players recognized as elite are characterized by their exceptional technical and tactical skills, strong physical condition, and distinctive anthropometric attributes (16). Consequently, at the elite tier, coaches are consistently striving to discover and nurture promising young football players through the most effective strategies (17). It is recommended that young players should engage in some form of aerobic exercise and strength training at least three days a week to improve overall fitness and help maintain an ideal BMI. Strength and fitness training, in addition to diet, are critical for optimizing BMI (9,18). In addition, according to Calleja-González et al., young football players obtain enough rest to allow their bodies to recover and repair themselves after physical activity (19).

Given the information stated above, the purpose of the current study was to examine anthropometric measures such as BMI level, height and weight according to playing positions for U17 young male football players competing in Local Amateur League of Nevşehir in Türkiye. Following that, the variables between these football players and analyses of possible differences between them were compared.

## METHODS

**Research Model:** The descriptive method was used to evaluate the results of the findings obtained in the research. In this respect, first, descriptive survey is a research method that deals with an existing situation that follows a certain process in the way it exists and makes sense of it, in other words, to describe it. The situation under consideration is evaluated within the framework of the conditions of formation and is expressed and transferred as it is (20). In the study, the anthropometric characteristics of amateur football players licensed in Nevşehir province were taken into consideration and the findings regarding the positions they play were evaluated in the light of statistical data (20).

**Purpose of the research:** The purpose of the current study was to examine anthropometric measures such as BMI level, height, and weight according to playing positions for U17 young male football players competing in Local Amateur League of Nevşehir in Türkiye. Following that, the variables between these football players and analyses of possible differences between them were compared.

**Research Group:** The study recruited 121 healthy young male football players aged 15 to 17 years ($M_{aged}$ = 16.35±0.6 years, $M_{weight}$ = 63.81±8.7 kg, $M_{height}$ = 1.73±1.10 m, BMI 21.10±2.3 kg. $m^2$). Participants had 4.8±2.3 sport years and were involved in football training 4.3±0.8 days per week. Football clubs in the region of Turkey, were invited using a convenience sample approach to participate in this research. All participants and their parents signed a consent form approved by the Nevsehir Haci Bektas Veli University's Institutional Review Board (permit no: 2018.10.110), and the study was executed according to the Helsinki Declaration as modified by the World Medical Association Declaration of Helsinki.

**Research Methodology:** The study followed established protocols from the International Society for the Advancement of Kinanthropometry (ISAK) to measure various anthropometric variables, including Body Height (in centimeters), Body Weight (in kilograms), and Body Mass Index (BMI) Body height and weight were measured using a stadiometer and a calibrated scale with a precision of 0.1 cm and 0.1 kg, respectively. BMI was calculated by dividing the body mass by the square of the height in meters.

**Analysis of Data:** The data collected in this study underwent a thorough analysis through descriptive and comparative statistics. In terms of descriptive statistics, the following measures were computed for each variable: Mean, Minimum, Maximum, Range, Deviation, Standard Deviation, Skewness, and Kurtosis to assess the distribution.

In the realm of comparative statistics, a parametric discriminative method was employed, specifically one-factor ANOVA (Analysis of Variance), along with the Tukey PostHoc analysis technique. These methods were used to identify differences related to player positions. The statistical software package SPSS for Windows version 25.0 was utilized for data processing.

## RESULTS

Table 1 presents numerical anthropometric measurements that indicate the physical condition of the football players. Among the positions, goalkeepers displayed the highest average height, weight, and BMI. Following them were defenders and attackers, who also exhibited relatively high measurements. On the other hand, midfielders had the lowest average height, weight, and BMI recorded.

**Table.1** Players anthropometric measures descriptive statistics

| Position | Variables | n | Mean | SD | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| Goalkeeper | Body Height | 10 | 1.78 | 0.86 | -1.97 | 1.47 |
| | Body Weight | | 75.50 | 15.86 | -.87 | .78 |
| | BMI | | 23.65 | 3.93 | .31 | -.17 |
| Defender | Body Height | 45 | 1.74 | .063 | -.14 | .11 |
| | Body Weight | | 63.20 | 9.32 | 1.09 | 1.63 |
| | BMI | | 20.90 | 2.66 | .37 | .23 |
| Midfielder | Body Height | 50 | 1.72 | .06 | -.70 | 1.03 |
| | Body Weight | | 61.67 | 8.07 | .09 | -.26 |
| | BMI | | 20.77 | 2.45 | .52 | .13 |
| Forward | Body Height | 16 | 1.75 | .06 | -.10 | -1.48 |
| | Body Weight | | 64.96 | 9.28 | .35 | -.20 |
| | BMI | | 21.06 | 2.41 | .12 | -1.30 |

A one-way analysis of variance (ANOVA) was conducted to test for differences in height among youth football players aged 15-17 playing in various positions in 121 youth teams. The players were evaluated in four different positions: goalkeeper, defender, midfielder, and forward. The assumption of homogeneity of variances, as required for ANOVA, was tested using Levene's test, which showed no statistically significant differences (Table.2).

The analysis revealed a statistically significant difference in height among players based on their positions, $F_{(3,117)} = 2.86$, $p < .05$, $\eta^2 = .08$. To determine which positions differed significantly in terms of height, a Tukey post-hoc test was conducted. According to the results of this test, goalkeepers were found to have statistically significantly taller heights compared to midfielders ($p < .05$).

Similarly, an ANOVA was used to test for statistically significant differences in weight among football players based on their positions. The Levene's test did not yield statistically significant results. The ANOVA test revealed a statistically significant difference in weight among players based on their positions, $F_{(3,117)} = 3.07$, $p < .05$, $\eta^2 = .14$. In the post-hoc analysis, it was observed that goalkeepers had higher weight values compared to defenders and midfielders ($p < .05$).

Lastly, an ANOVA was conducted to test for statistically significant differences in body mass index (BMI) values among football players based on their positions. Similar to the previous analyses, the Levene's test did not yield statistically significant results. The ANOVA test revealed a statistically significant difference in BMI among players based on their positions, $F_{(3,117)} = 3.40$, $p < .05$, $\eta^2 = .09$. In the post-hoc analysis, it was observed that goalkeepers had higher BMI values compared to defenders and midfielders ($p < .05$).

**Table.2** One Way ANOVA results of selected anthropometric measures according to playing positions.

| Variables | Sum of Squares | df | Mean Square | F | Sig. | $\eta^2$ |
|---|---|---|---|---|---|---|
| Height | 350.700 | 3/117 | 116.900 | 2.86 | 0.03* | 0.08 |
| Weight | 360.162 | 3/117 | 120.054 | 3.07 | 0.03* | 0.14 |
| BMI | 401.568 | 3/117 | 133.856 | 3.40 | 0.04* | 0.09 |

** $p < 0.05$*

## DISCUSSION

The present study examined the variation in body height among players occupying different positions. The results revealed that goalkeepers exhibited the highest average height, while forwards and defenders were approximately 4-5 cm shorter on average. Consequently, goalkeepers emerged as the group with the highest average height and BMI scores, whereas midfield players demonstrated the lowest values in terms of height and BMI.

Spehnjak et al., aimed to examine body composition parameters in elite youth soccer players as similar ages like ours. According to their findings (total 154 players) U17 category participants showed similar anthropometric measures like body height 180.6 ± 6.5, body weight 70.5 ± 8.0 and BMI 21.7 ± 2.0 (2). Also, Mohammedbirhan et al., in their study introduced that goalkeepers were the highest group with average 174.59 cm, 171.80 cm for defenders, 169.26 cm for midfielders, and 170.85 cm for forwards. At the same time goalkeepers were the weightiest group with average 71.41 kg, 68.90 kg for defenders, 65.24 for midfielders, and 66.65 kg for forwards (21). Conversely, Towlson et al., who researched 138 soccer players from English elite soccer development centers found higher values from our findings about body height and body weight (22). Similar age group anthropometric measures results were differed according to their playing positions. English populations were higher than Turkish population while Turkish population was heavier than English ones. Otherwise, Kovačević et al., tried to examine body composition profile of 51 young football players from Bosnia and Herzegovina (23). In their study they found the results of

U17 players' anthropometric measures were lower than Turkish young players.

The findings indicate that young soccer players in the Turkish local amateur league have body mass index (BMI) values within the normal range. These results align with previous studies conducted by Spehnjak et al., Nikolaidis & Karydis, and Mroczek et al. (2,4,24).

The findings of the present study indicated significant differences in anthropometric measures, particularly body weight, body height and BMI values based on playing positions. Our results partially align with the findings of Brahim et al., goalkeepers obtained higher body weight, body height and BMI scores compared to defender, midfielder and forward players (25). Consistent with the findings of Joksimovic et al., on 29 soccer players average aged 26.83, where goalkeepers were taller and heavier from other positions, while forward players were taller and heavier than defenders and midfielders (26). In another study Gill et al., was found that goalkeepers exhibited higher body weight and height compared to players in other positions (27). Furthermore, in their study, Soós and colleagues conducted a comprehensive analysis of the anthropometric and physiological profiles of 81 male youth soccer players in Hungary. Their findings revealed that goalkeepers exhibited notably superior performance in various anthropometric and physiological attributes compared to players in other positions (28). In other scientific study who analyzed anthropometric measures of elite Croatian players according to their playing position informed similar results as goalkeepers were the tallest, heaviest and who got higher values in BMI tests (29). Outcomes of the research are in line with the study conducted by Wong and colleagues, which found that goalkeepers who participated in the FIFA World Cup tournaments of 2002 and 2006 exhibited significantly greater height, weight, and BMI values compared to defenders, strikers, and midfielders. Notably, midfielders displayed the lowest anthropometric measurements in terms of height, weight, and BMI (30). These physical attributes could provide goalkeepers with advantages in aerial duels and goalkeeping duties. Findings of the study also partially coincide with the results reported by Malina and coauthors in a study involving soccer players aged 11 to 16. In their research, they observed that forwards were taller than defenders, and goalkeepers were heavier than midfielders, while forwards were shorter than midfielders, goalkeepers, and defenders. However, there were no significant differences in body mass index (BMI) observed among the various player positions (31). Our findings are similar to those reported by Slavko et al., in amateur German football players but differ from Wong et al, in Under 14 soccer players (32). These discrepancies may be attributed to variations in sample size, and measurement methods. The results of this study revealed notable variations in height, weight, and BMI, suggesting distinct physical demands for each playing position. In line with Reilly et al., elite soccer teams display relative heterogeneity in body size (33). Therefore, there may be anthropometric predispositions for specific positional roles, with taller players being more suited for goalkeeper positions or serving as the "target" player among the forwards. This factor could be linked to the pre-selection of early-maturing individuals for key positional roles, where body size provides an advantage over playing skills.

**Conclusion:** In football, anthropometric characteristics play a significant role in determining specific player positions, with variations in morphological traits observed based on the competitive level and position within the game. In this study, notable differences in anthropometric characteristics were found between goalkeepers and attackers, midfielders, and defenders. Goalkeepers exhibited the highest height, weight, and BMI values while midfielders had the lowest height, weight, and BMI values. The results of this research can offer valuable insights to soccer professionals, aiding their comprehension and interpretation of the importance of anthropometric traits in conjunction with player positions. Additionally, it can assist in tailoring individualized training programs to assess and enhance soccer-specific skills in alignment with these factors, ultimately aiming to optimize player performance. Awareness of these observed differences could enhance the training process and aid in early-age player selection.

Moreover, it was one of the limitations of the study to work with U17 Amateur League Football players of Nevşehir thus recommended that future studies can be apply on bigger sample especially for metropole cities in Türkiye. Also, some other measures can be added into study design to make more compare within variables.

***Ethics Text:*** *During the research process in this article, the journal's writing rules, publication principles, research and publication ethics rules, and journal ethics rules were followed. The responsibility for any violations that may arise regarding the article belongs to the author.*

***Board Name:*** *T.C. Nevşehir Hacı Bektaş Veli University Scientific Research and Publication Ethics Board / Date: 30.11.2021 / Decision No: 10/404*

***Conflict of Interest:*** *There is no personal or financial conflict of interest within the scope of the study.*

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## GENİŞLETİLMİŞ ÖZET

**Çalışmanın Amacı:** Bu çalışmanın amacı, Türkiye'de Nevşehir Yerel Amatör Ligi'nde mücadele eden U17 genç erkek futbolcuların BKİ düzeyi, boy ve vücut ağırlığı gibi antropometrik ölçümlerini oynadıkları mevkilere göre incelemektir. Ardından, bu futbolcular arasındaki değişkenler ve aralarındaki olası farklılıklar karşılaştırılmıştır.

**Literatür Araştırması:** Alanyazında var olan bilimsel çalışmalar BKİ'nin (ağırlık - boy oranı) genç futbolcularda antropometrik parametrelerin önemli bir göstergesi olduğunu kanıtlamıştır (2,4,24). Masanovic ve arkadaşları, elit, elit altı ve kontrol grubu gibi farklı seviyelerdeki 77 genç futbolcunun antropometrik özelliklerini belirlemeyi amaçladığı çalışma sonucunda gruplar arasında anlamlı farklılıklar bulunmuş ve BKİ açısından incelendiğinde istenilen verilere sahip grubun elit grup futbolculardan oluştuğu tespit edilmiştir (11). Bu bulgular da futbolda hedeflenen noktalara ulaşabilmek için ideal ya da ideale yakın antropometrik seviyelere ulaşılması gerektiğini göstermektedir. Çalışmamızda erkek genç futbolcular üzerinde çalıştık ancak Lesinski ve arkadaşları, antropometrik ölçümlerin öneminin kadın genç futbolcular

için de aynı olduğunu göstermiştir (12). Futbol antrenmanının vücut kompozisyonu ve fiziksel uygunluk düzeyi ile ilişkisini araştırmak için 14-16 yaş arası 17 sağlıklı kadın elit futbolcu ile çalışmışlardır. Sonuçlar, futbol antrenmanının elit genç kadın futbolcular arasında antropometri, fiziksel uygunluk ve vücut kompozisyonu sonuçlarında önemli farklılıklarla ilişkili olduğunu göstermiştir. Bu bağlamda, yüksek performansların iyi planlanmış bir antrenman süreci koşullarında mümkün olduğu iyi bilinmektedir. Dahası, yüksek kaliteli antrenman, oyuncuların özelliklerine ve belirli antropolojik yeteneklerin yapısına göre değerlendirilmelidir (30).

Bir başka bakış açısı da antropometrik ölçüm değerlerinin futbolcuların sakatlanma oranları üzerindeki etkisidir. Yaralanma riski ve BKİ arasındaki ilişkiyi inceleyen çalışmaların sonuçları, daha yüksek BKİ skorlarına sahip futbolcuların, daha düşük skorlara sahip sporculara kıyasla daha fazla yaralanma riski altında olduğunu göstermektedir. Daha fazla ağırlık taşımaları nedeniyle, daha yüksek BKİ skorlarına sahip futbolcularda eklem, bağ, diz yaralanmaları vb. daha yüksek oranlarda görülmektedir. Öte yandan, daha düşük BKİ'ye sahip oyuncular, vücutlarının dayanıklılık gerektiren fiziksel aktivite için yeterli kas kütlesine ve kemik yoğunluğuna ihtiyaç duyması nedeniyle kırıklara ve darbeye bağlı diğer yaralanmalara daha fazla maruz kalabilmektedir (5,14,15). Meta-analizler, sporla ilgili herhangi bir yaralanması olan genç oyuncuların daha yüksek BKİ'ye sahip olduğunu ve kemik stresi yaralanması olan gençlerin yaralanmayanlara göre daha düşük BKİ'ye sahip olduğunu göstermiştir (14).

Elit olarak kabul edilen yetenekli futbolcular, olağanüstü teknik ve taktik becerileri, güçlü fiziksel kondisyonları ve ayırt edici antropometrik özellikleriyle karakterize edilirler (16). Sonuç olarak, elit seviyede antrenörler sürekli olarak en etkili stratejilerle gelecek vaat eden genç futbolcuları keşfetmeye ve yetiştirmeye çalışmaktadır (17). Genel kondisyonu iyileştirmek ve ideal BKİ'nin korunmasına yardımcı olmak için genç oyuncuların haftada en az üç gün bir çeşit aerobik egzersiz ve kuvvet antrenmanı yapmaları önerilir. Diyete ek olarak kuvvet ve kondisyon antrenmanı, BKİ'yi optimize etmek için kritik öneme sahiptir (9,18). Ayrıca Calleja-González ve diğerlerine göre, genç futbolcular fiziksel aktiviteden sonra vücutlarının toparlanması ve kendini onarması için yeterince dinlenmelidir (19).

**Araştırma Modeli:** Araştırmada elde edilen bulguların sonuçlarının değerlendirilmesi adına betimsel tarama yöntemi kullanılmıştır. Bu bakımdan ilk olarak betimsel tarama, belirli bir süreç izleyen mevcut bir durumu var olduğu biçimde ele alıp anlamlandırmaya diğer bir tabirle tasvir etmeye ilişkin bir araştırma yöntemidir. Ele alınan durum oluşum şartları çerçevesinde değerlendirilerek olduğu gibi ifadeleştirilip aktarılır (20). Araştırmada, Nevşehir ilinde lisanslı olan amatör futbolcuların antropometrik özellikleri dikkate alınarak oynadıkları mevkilere yönelik bulgular istatistiksel veriler ışığında değerlendirilmiştir.

**Araştırma Grubu:** Çalışmaya yaşları 15 ila 17 arasında değişen 121 sağlıklı genç erkek futbolcu katılmıştır (Yaş = 16,35±0,6 yıl, E-ağırlık = 63,81±8,7 kg, E-boy = 1,73±1,10 m, BKİ 21,10±2,3 kg. $m^2$). Katılımcıların spor yılı 4.8±2.3'tür ve haftada 4.3±0.8 gün futbol antrenmanı yapmaktadırlar. Türkiye bölgesindeki futbol kulüpleri, bu araştırmaya katılmaları için kolayda örneklem yaklaşımı kullanılarak davet edilmiştir. Tüm katılımcılar ve ebeveynleri Nevşehir Hacı Bektaş Veli Üniversitesi Kurumsal İnceleme Kurulu (izin no: 2018.10.110) tarafından onaylanan bir onam formu imzalamış ve çalışma Dünya Tıp Birliği Helsinki Bildirgesi tarafından değiştirilen Helsinki Bildirgesi'ne göre yürütülmüştür.

**Araştırma Metodolojisi**: Çalışmada, Boy (santimetre cinsinden), Vücut Ağırlığı (kilogram cinsinden) ve Beden Kitle İndeksi (kg/m² cinsinden BKİ) dahil olmak üzere çeşitli antropometrik değişkenleri ölçmek için Uluslararası Kinantropometri Geliştirme Derneği (ISAK) tarafından belirlenen protokoller izlenmiştir. Futbolcuların boyları ve vücut ağırlıkları sırasıyla 0,1 cm ve 0,1 kg hassasiyete sahip bir stadiometre ve kalibre edilmiş bir tartı kullanılarak ölçülmüştür. BKİ, vücut kütlesinin metre cinsinden boyun karesine bölünmesiyle hesaplanmıştır.

**İstatistiksel Analiz:** Bu çalışmada toplanan veriler, tanımlayıcı ve karşılaştırmalı istatistikler yoluyla kapsamlı bir analize tabi tutulmuştur. Tanımlayıcı istatistikler açısından, her değişken için aşağıdaki ölçümler hesaplanmıştır: Dağılımı değerlendirmek için Ortalama, Minimum, Maksimum, Standart Sapma, Çarpıklık ve Basıklık değerleri saptanmıştır.

Karşılaştırmalı istatistik alanında, parametrik bir ayırt edici yöntem, özellikle de Tukey PostHoc analiz tekniği ile tek faktörlü ANOVA (Varyans Analizi) kullanılmıştır. Bu yöntemler oyuncu pozisyonlarıyla ilgili farklılıkları belirlemek için kullanılmıştır. Veri işleme için SPSS 25.0 istatistiksel yazılım paketi kullanılmıştır.

**Sonuç ve Değerlendirme:** Futbolda antropometrik özellikler, belirli oyuncu pozisyonlarının belirlenmesinde önemli bir rol oynar ve morfolojik özelliklerde rekabet düzeyine ve oyun içindeki pozisyona bağlı olarak farklılıklar gözlenir. Bu çalışmada, kaleciler ile hücum oyuncuları, orta saha oyuncuları ve savunma oyuncuları arasında antropometrik özellikler açısından anlamlı farklılıklar bulunmuştur. Kaleciler en yüksek boy, vücut ağırlığı ve BKİ değerlerine sahipken, orta saha oyuncuları en düşük boy, vücut ağırlığı ve BKİ değerlerine sahiptir. Bu araştırmanın sonuçları, antropometrik özelliklerin oyuncu pozisyonlarıyla bağlantılı olarak önemini anlamalarına ve yorumlamalarına yardımcı olarak futbol antrenörlerine değerli bilgiler sunabilir. Ayrıca, bu faktörlerle uyumlu olarak futbola özgü parametreleri değerlendirmek ve geliştirmek için bireyselleştirilmiş eğitim programlarının uyarlanmasına yardımcı olabilir ve sonuçta oyuncu performansını optimize etmeyi amaçlayabilir. Gözlemlenen bu farklılıkların farkında olmak, eğitim sürecini geliştirebilir ve erken yaşta oyuncu seçimine yardımcı olabilir.

Nevşehir'deki U17 Amatör Lig futbolcuları ile çalışılması çalışmanın sınırlılıklarından biridir, bu nedenle gelecekteki çalışmaların özellikle Türkiye'deki metropol şehirler için daha büyük örneklem üzerinde uygulanması önerilmektedir. Ayrıca, değişkenler arasında daha fazla karşılaştırma yapmak için çalışma tasarımına başka ölçütler de eklenebilir.