# MORPHOLOGICAL CHARACTERISTICS AND HEALTH RELATED PHYSICAL FITNESS OF MALE SOCCER PLAYERS ETHIOPIAN YOUTH SPORT ACADAMIES.

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***Abstract***

*The objective of this study was to compare the morphological characteristics and health related physical fitness of Ethiopian youth sports male football players. The cross-sectional study design was used. The total of one hundred twenty youth male football players were selected using purposive sampling technique from three youth soccer academies. The procedure of the morphological characteristics and health related physical fitness were measured using standard tests such as body height, weight, body mass index, waist circumference, thigh circumference, calf circumference, hip circumference, arm span,**leg length and sitting height was measured and also the physical fitness such as body composition, cardiovascular endurance, muscular strength and endurance, flexibility speed and agility. Data were analysed using Mean ± SD and Analysis of Variance (ANOVA) and also Pearson product moment correlation was used to examine the relationship between morphological characteristics and health related fitness (HRF) of youth soccer players. All significance level was set at p < 0.05. The results of the current study can showed that youth goalkeepers reviled the higher score than outfield players in ht, Wt, WC, HC, AS, LL and S.ht, an ideal BMI was observed. Youth players have a significance differences in all morphological characteristics between playing position. Youth players HRF between playing position revealed a significant difference in 1.5mile run and agility. While, there was no significant difference between playing position in BF%, Flexibility, Abdo Str. and Endu, Arm Str. and Endu and speed. Morphological characteristics of male players have a significant relationship with most of health related fitness (BF %, 1.5mile run, Flexibility, Arm Str. & End, Speed and agility) except, abdominal strength and endurance.*

**Key Words:** Health related fitness, Morphological, playing position, Soccer, Youth sport

**Introduction**

Football is widely acknowledged to be the world's most popular sport (Giulianotti 2012). The game takes place over two 45-min halves interspersed with a 15-min rest interval in between. However, in a team sport such as Football, the requirement for frequent changes in the type of movements (e.g. walking, running, sprinting, jumping, tackling) speed (e.g. accelerations, decelerations), direction and technical tasks features an active profile that is intermittent in nature (Stolen *et al.,* 2005). It is well know that understanding the specific requirements of elite – level football player can provide insightful information regarding what is truly needed for competitive success in that sport (Stolen *et al.,* 2005).

Particularly, Morphological measures of body composition, both physiological and physical capabilities, including cardiorespiratory endurance, muscular strength, muscular endurance, and flexibility, are generally assessed through testing of soccer players (Stolen *et al.,* 2005 and Canhands *et al.,* 2010).

Anthropometry is the method of measuring the human body or the individual body parts, which involves the quantitative definition of the morphological traits, and insight into an objective image of the state of growth of the person tested. Morphological characteristics appear to be great importance for orientation and selection in the most of sport disciplines, given that they are present in the specification equation of almost every sport, morphological dimension occupy one of the major positions. For a large number of sports disciplines, the morphological structure that affects the sports efficiency the most is already known, although the coefficients of participation of individual morphological dimensions in the specification equation indubitably change due to the development of technique and tactics, and modern achievements in a particular sport. Soccer is a sports game played in the open field, and the training is usually based on the movement, expressed through endurance, which consists of a series of moderate activities, followed by alternating periods of high intensity, which leads to significant metabolic heat production (Masanovic, 2015).

Role of morphological characteristics or body constitution in sport activities, on one side for specific kinesiological activity type, specific morphology type is necessary for above-average and top result achievement, and on the other side long-term training process, with regards of previous selection, genetically basis and social surroundings (Bala, 2000).

Morphological characteristics has been observed that may influence playing position within a team, with taller players tending to be found in goal and at centre-back, where being tall can be advantageous (Bangsbo, 1994; Reilly *et al*., 2000; Matkovic *et al*., 2003, Isabela *et al*., 2004; Bloomfield *et al*., 2004; Carvalho *et al*., 2004). Matkovic *et al.,* (2003) found that in addition to being the tallest (182.9 ± 4.3 cm) and heaviest (80.1 ± 5.1kg), Croatian goalkeepers also had longer legs and arms (p<0.05). In study of European players, Bloomfield *et al.,* (2003) concluded that variations in height and body mass between players in different leagues suggests that the styles of football may vary, with teams from different leagues preferring different types of players in certain positions. Players from the German Bundesliga were found to have the greatest height, body mass and body mass index (BMI) in comparison to top English, Italian and Spanish league players (Bloomfield *et al*., 2003). Therefore, based on the aforementioned reasons this study aim to investigate morphological characteristics and health related physical fitness of male soccer players Ethiopian youth sport academies.

**Material and Methods**

Cross-sectional study design was used. Participants of the study were male soccer players signed and having training in 2017/18 in the academies of Ambo FIFA goal project, Athlete Tirunesh Dibaba Training Centre and Ethiopia Youth Sports academy. The reasons for choosing them are the trainees having regular training in their respective academies, they are living together and they are U15 and U17 male youth players in different playing position.

**Morphological Variables**

Participants’ morphological variables; body height (Ht), weight (Wt), body mass index (BMI), waist circumference (WC), thigh circumference (TC), calf circumference (CC), hip circumference (HC), arm span (AS),leg length (LL) and sitting height (S.ht) were measured.

**Physical Fitness Test**

Participants’ health related physical fitness test Body Composition, Cardiovascular Endurance, Muscular Strength and Endurance, Flexibility Speed and Agility.

**Statistical Analysis**

Statistical analysis was carried out using the ‘Statistical Packages for Social Sciences’ software, version 20.0. Descriptive statistics are presented in means and standard deviations. Inferential statistics of Analysis of Variance (ANOVA) was used to determine significant differences among players at playing positions and also Pearson product moment correlation was used to examine the relationship between morphological characteristics and health related fitness (HRF) of youth soccer players. All significance level was set at p < 0.05.

**Result and Discussion**

**Characteristics of the Subjects**

Figure: 1 shows the characteristics of the study participate in playing position. As indicated the total number of the subject was 120. Among this the defensive players were recorded as the largest frequency 42 (35%), followed by midfielder, 36(30%), striker, 24 (20%) and Goalkeepers, 18 (15%).

**Table 1. Morphological characteristics of youth players in playing position**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Mean ± SD of Youth in Playing Position** | | | |  |
| **Striker** | **Midfielder** | **Defence** | **Goalkeeper** | **Total** |
| **Ht** | 1.68±0.05 | 1.67±0.06 | 1.70±0.07 | 1.79±0.64 | 1.70±0.07 |
| **Wt** | 57.48±5.20 | 52.85±4.24 | 58.42±6.36 | 64.19±6.59 | 57.43±6.65 |
| **BMI** | 20.38±1.76 | 18.90±1.41 | 20.08±1.61 | 20.06±1.74 | 19.78±1.69 |
| **WC** | 74.27±5.30 | 70.17±5.21 | 74.05±5.51 | 76.58±6.13 | 73.31±5.85 |
| **TC** | 49.44±3.53 | 46.85±2.22 | 49.37±3.50 | 49.61±3.86 | 48.66±3.41 |
| **CC** | 32.52±1.67 | 31.11±1.52 | 33.00±1.98 | 33.64±1.87 | 32.43±1.98 |
| **HC** | 75.90±5.68 | 71.83±4.76 | 76.35±4.25 | 77.06±4.95 | 75.01±5.21 |
| **AS** | 170.98±6.59 | 168.68±6.30 | 171.50±7.84 | 184.83±8.50 | 172.55±8.93 |
| **LL** | 85.17±6.05 | 85.22±3.88 | 86.70±4.26 | 93.86±5.47 | 87.03±5.55 |
| **S.ht** | 85.15±2.93 | 83.91±4.21 | 85.96±3.75 | 88.33±4.18 | 85.54±4.04 |

Table: 1. presents the morphological characteristics of youth football players’ Ht, Wt, BMI, WC, TC, CC, HC, AS, LL and S.ht in playing position. Goalkeeper players were recorded as taller height with a mean of 1.79±0.64m, followed by defensive player 1.70±0.07m, striker player 1.68±0.05m and midfielder player 1.67±0.06m. This can shows that the players playing position have different body height status. The mean weight of the goalkeeper players were recorded as heavier weigh 64.19±6.59kg, followed by defensive 58.42±6.364kg, striker player 57.48±5.20kg and midfielder player 52.85±4.24kg.This can show that the players playing position have different weigh status. The mean BMI of the youth striker players were recorded 20.38±1.76kg/m2, followed by defensive player 20.08±1.61kg/m2, goalkeeper player 20.06±1.74kg/m2 and midfielder player 18.90±1.41kg/m2. This indicates that the players with playing position have similar status in BMI. From the result we can understand that the players have an ideal BMI in all playing position as compared with the normal range of 18.5 to 24.9kg/m2 health of BMI.

WC of Goalkeepers recorded a mean of 76.58±6.13cm, followed by striker player 74.27±5.30cm, defensive player 74.05±5.51cm and midfielder player 70.17±5.21cm. This can show that the youth goalkeeper players have larger WC than the striker players, followed by defensive and midfielder players in playing position. The mean TC of youth goalkeeper players were recorded 49.61±3.86cm, followed by striker players 49.44±3.53cm, defensive player 49.37±3.5cm and midfielder player 46.85±2.22cm. This can show that the players playing position have similar TC except midfielder players have different. The mean CC of the goalkeeper players were recorded 33.64±1.87cm, followed by defensive player 33.00±1.98cm, striker players 32.52±1.67cm and midfielder player 31.11±1.52cm. This indicates that the players with playing position have different status in CC. The mean HC of the youth goalkeeper players were recorded 77.06±4.95cm, followed by defensive players 76.35±4.25cm, striker player 75.90±5.68cm and midfielder player 71.83±4.76cm. This can show that the players playing position have different HC in cm.

Goalkeeper players the larger AS with a mean of 184.83±8.50cm were observed, followed by defensive player 171.50±7.84cm, striker player 170.98±6.59cm and midfielder player 168.68±6.30cm. This can show that the goalkeepers have the larger AS than defensive, striker and midfielder players. Goalkeepers have longer LL with a mean 93.86±5.47cm, than defence player (86.70±4.26cm), midfielder player (85.22±3.88cm) and strikers (85.17±6.05 cm). This can show that the goalkeeper players have longer LL than the defence players, followed by striker and midfielder players in cm. The mean S.ht of the goalkeeper players were 88.33±4.18cm, followed by defence player 85.96±3.75cm, striker player 85.15±2.93cm and midfielder player 83.91±4.21cm. This can show that the players in playing position have difference S.ht status but while both striker and defence players have similar length in cm.

**Table 2 Health related fitness of youth players in playing position**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Fitness Factor** | **Mean ± SD of Youth in Playing Position** | | | |  |
| **Striker** | **Midfielder** | **Defence** | **Goalkeeper** | **Total** |
| BF% | 6.50±4.08 | 4.83±2.17 | 5.50±2.51 | 6.56±2.53 | 5.66±2.86 |
| 1.5 mile run | 9.92±0.29 | 9.83±0.38 | 10.31±0.38 | 10.97±0.54 | 10.19±0.55 |
| Flexibility | 12.17±4.75 | 9.89±4.02 | 10.71±5.39 | 12.39±4.62 | 11.01±4.81 |
| Abdo Str. & En | 39.67±14.05 | 39.22±11.96 | 38.64±11.35 | 40.72±16.17 | 39.33±12.74 |
| Arm Str. & End | 37.63±14.15 | 31.69±11.04 | 35.52±10.30 | 36.72±13.18 | 34.98±11.88 |
| Speed | 5.53±0.39 | 5.68±0.46 | 5.69±0.40 | 5.82±0.34 | 5.67±0.41 |
| Agility | 16.70±0.53 | 16.51±0.57 | 16.88±0.47 | 17.48±0.45 | 16.82±0.60 |

Table 2, Presents youth football players the mean and standard deviation of playing position health related fitness measures percentage of body fat (BF %),1.5 mile run in min, sit and reach in cm (Flexibility), 1min sit-up repetitions (Abdominal strength & Endurance),1min push-up repetitions (Arm strength & Endurance), 35 meter run in second (Speed) and Illinois agility in second (Agility). The mean body fat the youth goalkeeper players were recorded 6.56±2.53%, followed by striker players’ 6.50±4.08%, defence players’5.50±2.51% and midfield players’ 4.83±2.17%. This indicates that the youth goalkeeper players showed slightly higher than percentage of body fat striker player, followed by defence and midfield players.

Youth midfield players were recorded a better 1.5 mile run mean value of 9.83±0.38min, followed by striker player 9.92±0.29min, defensive player 10.31±0.38min and goalkeeper player 10.97±0.54min. From the result we can understand the midfielder players faster than striker players followed by defensive player and goalkeeper player in 1.5 mile run.

The mean flexibility (sit and reach) of the youth goalkeeper players were recorded 12.39±4.62cm, followed by striker player 12.17±4.75cm, defence player 10.71±5.39cm and midfielder player 9.89±4.02cm. This can shows that the players in playing position have different flexibility status the goalkeeper players slightly flexible than striker players followed by defence and midfielder player have sit and reach test in cm.

Youth goalkeepers were score a better mean value of Abdominal strength & Endurance 40.72±16.17repe/min, followed by striker players 39.67±14.05repe/min, midfielder player 39.22±11.96repe/min and defensive players’ 38.64±11.35repe/min. This indicates that the have similar performance status Abdominal strength & Endurance all male players in playing position

The mean arm strength & Endurance of the youth striker players were recorded 37.63±14.15repe/min, followed by goalkeeper player 36.72±13.18repe/min, defence player 35.52±10.30repe/min and midfielder player 31.69±11.04repe/min. This can show that the players in playing position have similar performance arm strength & Endurance.

Youth striker players were recorded better speed (35 meter run) with a mean of 5.53±0.39sec, followed by midfielder player 5.68±0.46sec, defensive player 5.69±0.40sec and goalkeeper player 5.82±0.34sec. From the result we can understand the striker players faster than midfielder players followed by defensive player and goalkeeper player in 35 meter speed run.

The mean agility of the youth midfield players were recorded 16.51±0.57sec, followed by striker player 16.70±0.53sec, defensive player 16.88±0.47sec and goalkeeper player 17.48±0.45sec. From the result we can understand the midfielder players faster than striker players followed by defence and goalkeeper player in Illinois agility.

**Table 3 ANOVA of players’ morphological characteristics with playing positions**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ANOVA of Youth Players Morphological Characteristics with Playing Positions** | | | | | | |
|  | | Sum of Squares | df | Mean Square | F | Sig. |
| **Ht** | Between Groups | 0.185 | 3 | 0.062 | **16.478** | 0.000 |
| Within Groups | 0.435 | 116 | 0.004 |  |  |
| Total | 0.621 | 119 |  |  |  |
| **Wt** | Between Groups | 1619.016 | 3 | 539.672 | **17.160** | 0.000 |
| Within Groups | 3648.104 | 116 | 31.449 |  |  |
| Total | 5267.119 | 119 |  |  |  |
| **BMI** | Between Groups | 41.813 | 3 | 13.938 | **5.396** | 0.002 |
| Within Groups | 299.645 | 116 | 2.583 |  |  |
| Total | 341.458 | 119 |  |  |  |
| **WC** | Between Groups | 593.572 | 3 | 197.857 | **6.593** | 0.000 |
| Within Groups | 3481.019 | 116 | 30.009 |  |  |
| Total | 4074.592 | 119 |  |  |  |
| **TC** | Between Groups | 170.208 | 3 | 56.736 | **5.413** | 0.002 |
| Within Groups | 1215.874 | 116 | 10.482 |  |  |
| Total | 1386.081 | 119 |  |  |  |
| **CC** | Between Groups | 102.769 | 3 | 34.256 | **10.911** | 0.000 |
| Within Groups | 364.198 | 116 | 3.140 |  |  |
| Total | 466.967 | 119 |  |  |  |
| **HC** | Between Groups | 532.314 | 3 | 177.438 | **7.640** | 0.000 |
| Within Groups | 2694.178 | 116 | 23.226 |  |  |
| Total | 3226.492 | 119 |  |  |  |
| **AS** | Between Groups | 3360.384 | 3 | 1120.128 | **21.176** | 0.000 |
| Within Groups | 6135.816 | 116 | 52.895 |  |  |
| Total | 9496.200 | 119 |  |  |  |
| **LL** | Between Groups | 1045.437 | 3 | 348.479 | **15.420** | 0.000 |
| Within Groups | 2621.488 | 116 | 22.599 |  |  |
| Total | 3666.925 | 119 |  |  |  |
| **S.ht** | Between Groups | 247.582 | 3 | 82.527 | **5.666** | 0.001 |
| Within Groups | 1689.524 | 116 | 14.565 |  |  |
| Total | 1937.106 | 119 |  |  |  |

Table: 3 presented that the differences of morphological characteristics of youth players between their esteemed academies. The result indicated that, the obtained ‘F’ ratio for group of height was 16.478, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. Hence, the result indicated that, a significance differences exist in morphological characteristics of height among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of weight was 17.160, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of weight among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of BMI was 5.396 which are greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of BMI among youth players in playing position at p< 0.002. The obtained ‘F’ ratio for groups of WC was 6.593 which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of WC among male players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of TC was 5.413, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, significant differences exist in morphological characteristics of TC among youth players in playing position at p< 0.002. The obtained ‘F’ ratio for groups of CC was 10.911, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of CC among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of HC was 7.640, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exists in morphological characteristics of HC among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of AS was 21.176, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exists in morphological characteristics of AS among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of LL was 15.420, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of LL among youth players in playing position at p< 0.000. The obtained ‘F’ ratio for groups of S.ht was 5.666, which is greater than the table value of 2.68 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference exist in morphological characteristics of S.ht among youth players in playing position at p< 0.001.

The result indicated that youth players have a significance differences in all morphological characteristics between playing position. The finding of the current study, supported with a statistically significant difference was observed in height of the players across playing positions (Joksimović, 2018), whereas in contras result was observed in all other variables across playing positions (Joksimović, 2018).

**Table 4 ANOVA of youth players HRF with playing position**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ANOVA of Youth Players HRF with Playing Positions** | | | | | | |
|  | | Sum of Squares | df | Mean Square | F | Sig. |
| **BF %** | Between Groups | 57.047 | 3 | 19.016 | 2.414 | 0.070 |
| Within Groups | 913.944 | 116 | 7.879 |  |  |
| Total | 970.992 | 119 |  |  |  |
| **1.5mile run** | Between Groups | 18.184 | 3 | 6.061 | **38.886** | **0.000** |
| Within Groups | 18.081 | 116 | 0.156 |  |  |
| Total | 36.265 | 119 |  |  |  |
| **Flexibility** | Between Groups | 115.254 | 3 | 38.418 | 1.690 | 0.173 |
| Within Groups | 2637.738 | 116 | 22.739 |  |  |
| Total | 2752.992 | 119 |  |  |  |
| **Abdominal Str. & End** | Between Groups | 57.857 | 3 | 19.286 | 0.116 | 0.950 |
| Within Groups | 19262.810 | 116 | 166.059 |  |  |
| Total | 19320.667 | 119 |  |  |  |
| **Arm Str. & End** | Between Groups | 623.574 | 3 | 207.858 | 1.492 | 0.221 |
| Within Groups | 16165.351 | 116 | 139.356 |  |  |
| Total | 16788.925 | 119 |  |  |  |
| **Speed** | Between Groups | 0.881 | 3 | 0.294 | 1.738 | 0.163 |
| Within Groups | 19.606 | 116 | 0.169 |  |  |
| Total | 20.487 | 119 |  |  |  |
| **Agility** | Between Groups | 11.967 | 3 | 3.989 | **15.237** | **0.000** |
| Within Groups | 30.369 | 116 | 0.262 |  |  |
| Total | 42.336 | 119 |  |  |  |

Table 4 presented about health related fitness (HRF) differences of youth players between playing positions. The result indicated that, the obtained ‘F’ ratio of BF% for group was 2.414, which is less than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence. Hence, the result indicated that, there was no significant differences exist in BF% among youth players playing position. The same insignificant difference was observed in flexibility the obtained ‘F’ ratio for group was 1.690, which is less than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence, in abdominal strength and endurance the obtained ‘F’ ratio for group was 0.116, which is less than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence, in arm strength and endurance the obtained ‘F’ ratio for group was 1.492, which is less than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence and in speed the obtained ‘F’ ratio for group was 1.738, which is less than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence. Whereas, a significant differences were observed among youth players between playing positions were in 1.5mile run with the obtained ‘F’ ratio for group was 38.886, which is greater than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference was exist in 1.5mile run among youth players in playing position at p< 0.000. And also the same significant difference was obtained in agility with the obtained ‘F’ ratio for group was 15.237, which is greater than the table value of 2.7 with df 3 and 116 required for significance at 0.05 level of confidence. The result indicated that, a significant difference was exists in agility among male players in sports academies at p< 0.000.

The finding of this study indicate that a significant difference in health related fitness test between the playing positions of youth players were observed only in 1.5mile run and agility tests. It is supported with the study indicated a significant difference was determined in the Max VO2max (Sever & Zorba, 2018). While, there was no a significant difference observed among the playing positions of BF%, flexibility, abdominal & arm strength and endurance, and speed. Similarly, the previous study showed the players’ flexibility, speed and agility test scores do not display any differences among the positions (Sever & Zorba, 2018).

**Table 5. The relationship of youth players in morphological characteristics and HRF**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pearson Correlation of Yout**h **Players in Morphological Characteristics and HRF** | | | | | | | | |
|  | | **BF %** | **1.5mile run** | **Flexibility** | **Abdominal Str. & End** | **Arm Str. & End** | **Speed** | **Agility** |
| **Ht** | Pearson Correlation | -0.138 | **.314\*\*** | 0.002 | 0.158 | -0.047 | -0.048 | **0.195\*** |
| Sig. | 0.134 | 0.000 | 0.983 | 0.084 | 0.607 | 0.599 | 0.033 |
| **Wt** | Pearson Correlation | **.360\*\*** | **.266\*\*** | **0.210\*** | 0.145 | **0.277\*\*** | -0.034 | **0.181\*** |
| Sig. | 0.000 | 0.003 | 0.021 | 0.113 | 0.002 | 0.714 | 0.048 |
| **BMI** | Pearson Correlation | **0.642\*\*** | 0.043 | **0.307\*\*** | 0.028 | **0.439\*\*** | -0.005 | 0.017 |
| Sig. | 0.000 | 0.640 | 0.001 | 0.760 | 0.000 | 0.959 | 0.853 |
| **WC** | Pearson Correlation | **0.509\*\*** | 0.123 | **0.276\*\*** | 0.155 | **0.248\*\*** | -0.103 | 0.067 |
| Sig. | 0.000 | 0.181 | 0.002 | 0.091 | 0.006 | 0.263 | 0.467 |
| **TC** | Pearson Correlation | **0.509\*\*** | 0.127 | **0.202\*** | 0.068 | **0.244\*\*** | -0.074 | 0.076 |
| Sig. | 0.000 | 0.165 | 0.027 | 0.460 | 0.007 | 0.421 | 0.407 |
| **CC** | Pearson Correlation | **0.421\*\*** | **0.192\*** | 0.179 | 0.114 | **0.363\*\*** | -0.037 | 0.003 |
| Sig. | 0.000 | 0.035 | 0.051 | 0.217 | 0.000 | 0.686 | 0.976 |
| **HC** | Pearson Correlation | 0.030 | **0.252\*\*** | 0.115 | 0.058 | -0.081 | -0.063 | 0.179 |
| Sig. | 0.744 | 0.005 | 0.209 | 0.532 | 0.378 | 0.492 | 0.051 |
| **AS** | Pearson Correlation | 0.015 | **0.330\*\*** | 0.083 | 0.051 | -0.035 | 0.007 | **0.283\*\*** |
| Sig. | 0.871 | .000 | 0.367 | 0.582 | 0.701 | 0.936 | 0.002 |
| **LL** | Pearson Correlation | -0.061 | **0.270\*\*** | -0.015 | 0.060 | -0.124 | 0.038 | **0.288\*\*** |
| Sig. | 0.509 | 0.003 | 0.873 | 0.518 | 0.177 | 0.681 | 0.001 |
| **S.ht** | Pearson Correlation | **-0.229\*** | **0.259\*\*** | -0.109 | 0.128 | -0.033 | 0.004 | 0.101 |
| Sig. | 0.012 | 0.004 | 0.236 | 0.162 | 0.718 | 0.969 | 0.271 |
| \*\*. Correlation is significant at the 0.01 level and \* 0.05 level. | | | | | | | | |

As indicated in table 5 the relationship of morphological characteristics and health related fitness of youth players height has a significance positive correlation with 1.5mile run (r = 0.314, r2 = 0.098, P < 0.000) at P < 0.001 and with agility (r = 0.195, r2 = 0.038, P < 0.033) at P < 0.05. Weight has a significance positive correlation with BF% (r = 0.360, r2 = 0.129, P < 0.000) at P < 0.01, with 1.5mile run (r = 0.266, r2 = 0.129, P < 0.003) at P < 0.01, with flexibility (r = 0.210, r2 = 0.044, P < 0.021) at P < 0.05, with arm strength and endurance (r = 0.277, r2 = 0.076, P < 0.002) at P < 0.01, and with agility (r = 0.181, r2 = 0.033, P < 0.048) at P < 0.05. BMI has a significance positive correlation with BF% (r = 0.642, r2 = 0.412, P < 0.000) at P < 0.01, with flexibility (r = 0.307, r2 = 0.094, P < 0.001) at P < 0.01 and with arm strength and endurance (r = 0.439, r2 = 0.193, P < 0.000) at P < 0.01. WC has a significance positive correlation with BF% (r = 0.509, r2 = 0.259, P < 0.000) at P < 0.01, with flexibility (r = 0.276, r2 = 0.076, P < 0.002) at P < 0.01 and with arm strength and endurance (r = 0.248, r2 = 0.062, P < 0.006) at P < 0.01. TC has a significance positive correlation with BF% (r = 0.509, r2 = 0.259, P < 0.000) at P < 0.01, with flexibility (r = 0.202, r2 = 0.041, P < 0.027) at P < 0.05 and with arm strength and endurance (r = 0.244, r2 = 0.059, P < 0.007) at P < 0.01. CC has a significance positive correlation with BF% (r = 0.421, r2 = 0.177, P < 0.000) at P < 0.01, with 1.5mile run (r = 0.192, r2 = 0.037, P < 0.035) at P < 0.05 and with arm strength and endurance (r = 0.363, r2 = 0.132, P < 0.000) at P < 0.01. HC has a significance positive correlation with 1.5mile run (r = 0.252, r2 = 0.064, P < 0.005) at P < 0.01. AS has a significance positive correlation with 1.5mile run (r = 0.330, r2 = 0.109, P < 0.000) at P < 0.01 and with Agility (r = 0.283, r2 = 0.080, P < 0.002) at P < 0.01. LL has a significance positive correlation with 1.5mile run (r = 0.270, r2 = 0.073, P < 0.003) at P < 0.01 and with agility (r = -0.288, r2 = 0.083, P < 0.001) at P < 0.01. S.ht has a significance inverse correlation with BF% (r = -0.229, r2 = 0.052, P < 0.012) at P < 0.05 and a significance positive correlation with 1.5mile run (r = 0.259, r2 = 0.067, P < 0.004) at P < 0.01.

While, there was no a significance correlation between health related fitness of youth players Abdominal strength and endurance with all morphological characteristics.

**Conclusion**

Based on the results of the current study the following points are concluded:

* Youth goalkeepers reviled the higher score than outfield players in Ht, weight, WC, HC, AS, LL and S.ht, an ideal BMI was observed in all playing position, midfielders have smaller TC than the goalkeeper, striker and defensive player and also in CC goalkeeper and defenders were scored higher than strikers and midfielders.
* Youth midfielders have less BF% than goalkeeper, striker and defenders, midfielders and strikers were scored a better 1.5 mile run test than defenders and goalkeepers, goalkeepers and strikers were scored a better flexibility (sit and reach) than defenders and midfielders, the goalkeepers have a better abdominal strength and endurance than outfield players, midfielders have the lowest arm strength and endurance than striker, defenders and goalkeepers, the goalkeepers have the lowest score in Illinois agility test than the outfield players. However, male youth footballers have almost equal performance in speed (35 meter run).
* Youth players have a significance differences in all morphological characteristics between playing position.
* Youth Players HRF between Playing Position revealed a significant difference in 1.5mile runand agility. While, there was no significant difference between playing position in BF%, Flexibility, Abdo Str. and Endu, Arm Str. and Endu and speed.
* Morphological characteristics of male players have a significant relationship with most of health related fitness (BF %, 1.5mile run, Flexibility, Arm Str. & End, Speed and agility) except, abdominal strength and endurance.

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**REFFERNCE**

Bala, G. (2000). Dependence of the morphological dimension definition on the number of manifest anthropometric variables. *Journal of the Anthropological Society of Yugoslavia,* 35, 95-102

Bangsbo, J. (1994). The physiology of soccer: With special reference to intense physical exercise. *Acta Physiologica Scandinavica*, 150 (suppl. 619), 1-156.

Bloomfield, J., Polman, R. and O'Donoghue, P.G. (2003). Analysis of elite player height and body mass from four major european leagues. *World Congress on Science and Football–5, Book of Abstracts*. pp. 159. Gymnos Editorial Deportiva.

Bloomfield, J., Polman, R. and O'Donoghue, P.G. (2004). Analysis of body composition of players of four major European leagues. *Journal of Sports Sciences*, 22(6):525-526.

Canhadas, I. L., Silva, R. L. P., Chaves, C. R., & Portes, L. A. (2010). Anthropometric and physical fitness characteristics of young male soccer players. *Revista Brasileira de Cineantropometria & Desempenho Humano*, *12*(4), 239-245.

Carvalho, C., Roriz-de-Oliveira, P. and Carvalho, A. (2004). Analysis of different parameters of physical condition for footballers in relation to their positional role. *Journal of Sports Sciences*, 22(6):531-532.

Giulianotti, R. (2012). Football. John Wiley & Sons, Ltd

Isabela, G., Rodrigo, C., Julio, T. and Barros, T. (2004). Assessment of body composition in professional soccer players according to their positional roles. Medicine and Science in Sports and Exercise, 36(5):S207.

Joksimović, A., (2018). Some physical fitness indicators of young academy football players according to playing positions in United Arab Emirates. Research in Physical Education, Sport and Health. *7*(1). 23-30.

Masanovic, B. (2015). Anthropological indicators of the proprioceptive training success with football players and students aged 15-16 years. *Unpublished Doctoral Dissertation. Novi Sad: University of Novi Sad*.

Matkovic, B.R., Matkovic, B., Jankovic, S., Ruzic, L. and Leko, G. (2003). Morphological characteristics of elite Croatian soccer players according to the team position. World Congress on Science and Football – 5, Book of Abstracts. pp. 172. Gymnos Editorial Deportiva.

Reilly, T. (2000). Endurance aspects of soccer and other field games. In: Endurance in Sport. *Shephard, R.J. and Astrand, P.O. (Eds)*. pp. 900-930. Oxford: Blackwell.

Sever, O., & Zorba, E. (2018). Investigation of physical fitness levels of soccer players according to position and age variables. *Facta Universitatis, Series: Physical Education and Sport*, 295-307.

Stølen, T., Chamari, K., Castagna, C., & Wisløff, U. (2005). Physiology of soccer. *Sports medicine*, *35*(6), 501-536.