

Anthropometric quality of Mizan-Aman Football Project Players;- Cross Playing Positions Comparison

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Abstract: The purpose of this study was to compare selected anthropometric variables among defenders, midfielders and strikers of Mizan-Aman youth football projects players. 75 football players (25 defenders, 25 midfielders and 25 strikers) with the age range of 19-23 from Mizan-Aman youth football projects players was draw for study population. To this end the Standing height, Weight, Foot length, Lower Leg length, Upper leg length, Calf girth and Mid-thigh girth were selected as study variables. After the collection of relevant data, it was processed and analyzed with descriptive statistics using SPSS version 20 statistical software. The result showed that there were statistically significance differences on mean value of foot length, upper leg, lower leg length, weight, height, calf girth and thigh girth of defenders, midfielders and forward players. Foot length of defenders had greater than the midfielders and forwards, as well as foot length of midfielders was greater than forward players. Upper leg length of midfielders had greater than the defenders and forward players and the lower leg length of forwards had greater than the midfielders and defenders. Furthermore, the weight and height of defenders had greater than the midfielders and forwards.

Key words: Anthropometry, youth football project, football

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I. INTRODUCTION

Football is also known as Soccer, is probably world's most popular sport, played in practically every nation at varying levels of competence. Football may be played competitively or for fun, as a career, a means of keeping fit or simply a recreational pursuit (Reilly, 1996). Soccer is now being played in more than 210 countries throughout the world. Soccer is popular because of the fact it is a simple game requiring very minimum infrastructures and equipment. Success in soccer is dependent upon a variety of factors including the physical characteristics and physiological capacities of the players, their level of skill, their degree of motivation, and tactics employed by them against the opposition. Some of those factors are not easily measured objectively, but others can be tested using standardized methods and can provide useful information for coaches (Singh, 2011).

In a soccer game, players have to perform various technical and tactical tasks according to their playing positions, which are defined as goalkeeper, defender, midfielder and forward. FIFA, 2002 and 2006 reported that professional soccer players have positional differences in anthropometry. Anthropometry is the branch of anthropology that is worried about human body measurement. The definition has confined to the kind of measurements commonly used in associating physical performance with body build. Anthropometry involves the measurement of external part of the body, including body diameters, body circumference, heights and breadth (Findak V et al 1996). Indeed, many experts in the field, such as football coaches, managers and scientists believe that the success of this sport can be associated with anthropometric characteristics of players. Even, some studies have focused on the relationship between anthropometric profiles of players and their standard positions (Gil S et al 2007).

For example on FIFA 2006, goal keeper were significantly taller, heavier, and had higher BMI than defender, midfielder and forward, whereas forward were significantly shorter and lighter than the others. This evidence suggests that anthropometrical variables have been important for categories players in different playing positions and result in the selection of young players based on anthropometrical measurements.

Statement of the problems

The purpose of this research study was to compare and analyze the differences on selected anthropometric variables between defenders, midfielders and forwards of mizan-Aman youth football players in bench Maji zone. But it does not mean that the outcome of this research is restricted bench Maji zone. The position of football players was categorized in three which is defenders, midfielders, & strikers. The three playing position was selected that is defenders, midfielders & front players.

Methods and procedures

A quantitative cross sectional research design was employed to operate the study variable.. The study was conducted in south nation nationality people region bench maji zone, Ethiopia. The researcher surveyed mizan-Aman youth football players in bench maji zone and a total of 100 players were found suitable for the study. From this suitable player’s population, 75 players (25 players from defenders, 25 players from mid-fielders and 25 players from forwards) were selected as subjects for the study. Purposive sampling technique was employed to select the players to the study. Data analysis was carried out by using SPSS version 20 statistical software packages. Statistical techniques like descriptive. Descriptive statistics were calculated by each positional role. The anthropometric Variables of the this study was consists of Standing height, Weight , Foot length, Lower Leg length, Upper leg length, Calf girth and Mid-thigh girth. The instruments used to collect the anthropometric measurement data were: Stadiometer, weight machine, steel tape, wall, chair, paper, pen, chalk and artificial marker.

Analysis of results

The comparative analysis on selected anthropometric variables of defenders, midfielders and forwards of miza-Aman youth football players in bench maji zone were analyzed and presented as follows. The data collected on foot length of defenders, midfielders and forward players of mizan-Aman youth football players were analyzed in table 1.

Table 1. Comparison of foot length measurements between defenders, midfielder and forward

Variable	Position	N	Mean	Std.	Std. Error	95% Confidence Interval for Mean	
						Lower B.	Upper B.
Foot length (cm)	Defenders	25	26.72	1.137	.227	26.25	27.19
	Midfielder	25	26.36	.810	.162	26.03	26.69
	Forward	25	26.04	1.172	.234	25.56	26.52

Table 1 show that the mean and standard deviation of foot length for defenders, midfielders and forwards were 26.72 ± 1.137 , 26.36 ± 0.810 and 26.04 ± 1.172 respectively. The table showed that there were differences on mean value of foot length of defenders, midfielders and forward players. Based on the analysis, the foot length of defenders had greater than the midfielders and forwards. As well as foot length of midfielders was greater than forward players.

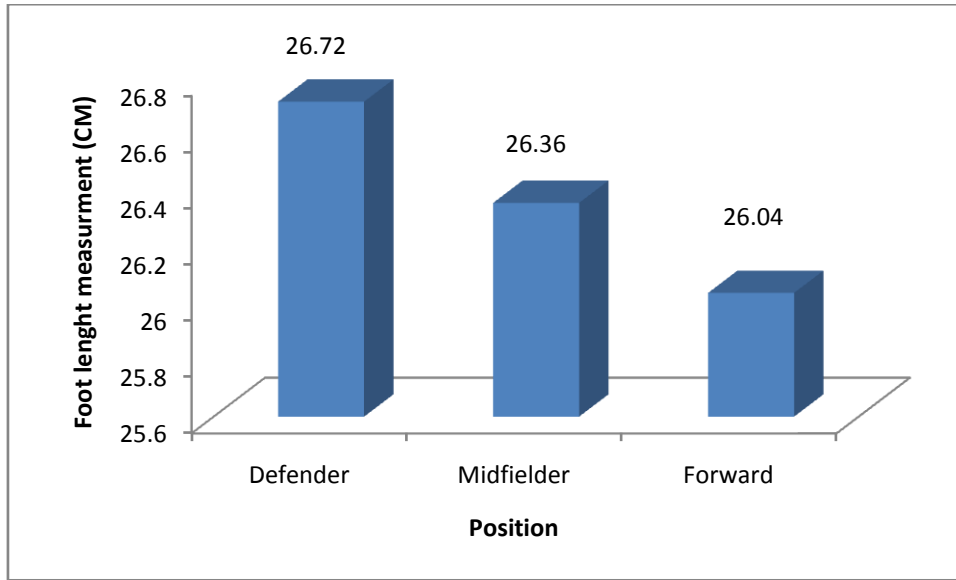


Fig 1. Comparison means scores of foot length as anthropometric measurement between defenders, midfielder and forward.

Table 2. Comparison of upper leg length measurements between defenders, midfielder and forward.

Variable	Position	N	Mean	Std. D	Std. Error	95% Confidence Interval for Mean	
						Lower B.	Upper B.
Upper leg length	Defender	25	48.64	3.239	.648	47.30	49.98
	Midfielder	25	49.04	3.062	.612	47.78	50.30
	Forward	25	47.84	3.815	.763	46.27	49.41

Table 2. Shows that the mean and standard deviation of upper leg length for defenders were 48.64 ± 3.239 , for midfielders were 49.04 ± 3.062 and for forwards were 47.84 ± 3.815 . The table also showed that there were differences on mean value of upper leg length between defender, midfielder and forward players. Based on the analysis, the upper leg length of midfielders had greater than the defenders and forward players. As well as upper leg length of defenders was greater than forward players.

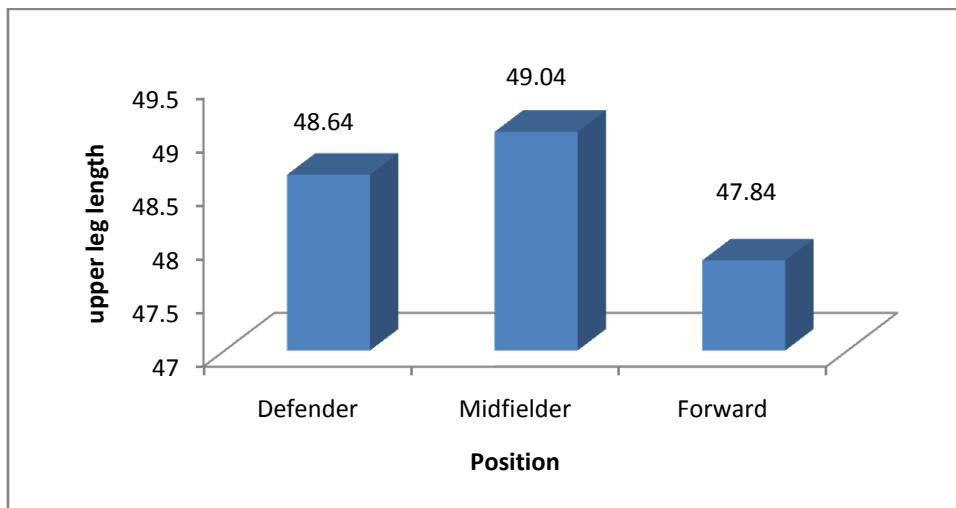


Fig.2 Comparison means scores of upper leg length as anthropometric measurement between defenders, midfielder and forward.

Table 3: Comparison of lower leg length measurements between defenders, midfielder and forward

Variable	Position	N	Mean	Std. Dev	Std. Er	95% Confidence Interval for Mean	
						Lower B	Upper B
Lower leg length (cm)	Defenders	25	41.20	2.693	.539	40.09	42.31
	Midfielder	25	41.36	1.997	.399	40.54	42.18
	Forward	25	42.28	3.385	.677	40.88	43.68

The above table 3 shows that the mean of lower leg length for defenders, mid fielders and forwards were 41.20 ± 2.693 , 41.36 ± 1.997 and 42.28 ± 3.385 respectively. The result showed that there were differences on mean value of lower leg length of defenders, midfielders and forward players. Based on the analysis, the lower leg length of forwards had greater than the midfielders and defenders. As well as lower leg length of midfielders was greater than defender players.

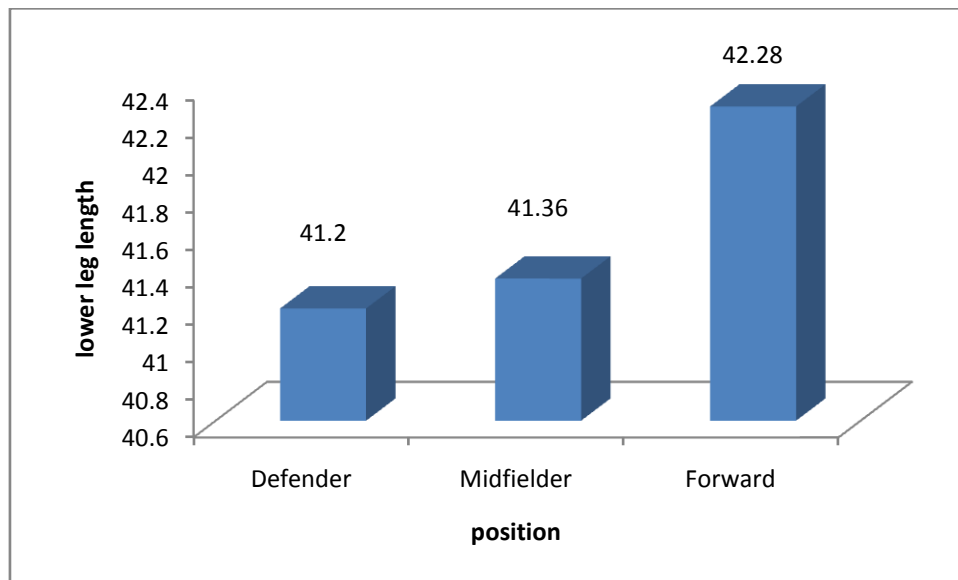


Fig.3 Comparison means scores of lower leg length as anthropometric measurement between defenders, midfielder and forward.

Table 4: Comparison of body weight between defenders, midfielder and forward

Variable	Position	N	Mean	Std. D.	Std. Er.	95% Confidence Interval for Mean	
						Lower B.	Upper B.
Weight (kg)	Defenders	25	67.6000	5.36967	1.07393	65.3835	69.8165
	Midfielder	25	63.5200	4.15452	.83090	61.8051	65.2349
	Forward	25	65.1440	6.17941	1.23588	62.5933	67.6947

The above table shows the mean value and standard deviation of weight for defenders, midfielders and forwards were 67.6000 ± 5.36967 , 63.5200 ± 4.15452 and 65.1440 ± 6.17941 respectively. The table showed that there were differences on mean value of weight of defenders, midfielders and forward players. The highest mean was scored by defenders followed by forwards and the lowest mean was midfielders.

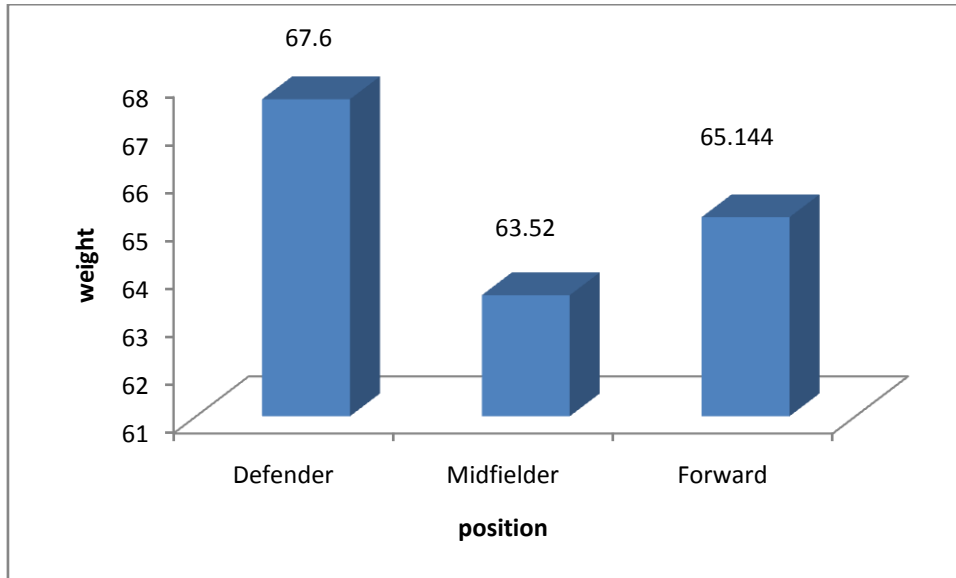


Fig.4 Comparison means scores of body weight as anthropometric measurement between defenders, midfielder and forward.

Table 5 Comparison of body Height between defenders, midfielder and forward.

Variable	position	N	Mean	Std. D	Std. Er	95% Confidence Interval for Mean	
						Lower B	Upper B
Height (cm)	Defenders	25	1.7612	.05981	.01196	1.7365	1.7859
	Midfielder	25	1.7424	.05629	.01126	1.7192	1.7656
	Forward	25	1.7380	.05439	.01088	1.7155	1.7605

The above table shows the mean and standard deviation of height for defenders, mid fielders and forwards were 1.7612 ± 0.05981 , 1.7424 ± 0.05629 and 1.7380 ± 0.05439 respectively. The table showed that there were differences between the mean height of defenders, midfielders and forwards players. Based on the analysis, the height of defenders had greater than the midfielders and forwards. As well as height of midfielders was greater than forward players.

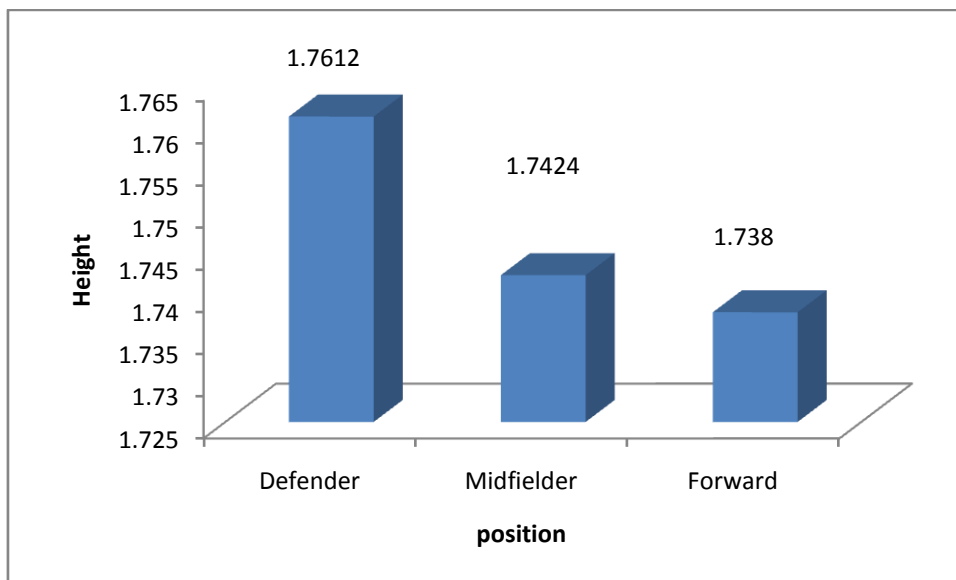


Fig.5 Comparison means scores of height as anthropometric measurement between defenders, midfielder and forward.

Table 6. Comparison of calf girth between defenders, midfielder and forward

Variable	Position	N	Mean	Std. D	Std. Er	95% Confidence Interval for Mean	
						Lower B.	Upper B.
Calf girth (cm)	Defenders	25	34.52	1.896	.379	33.74	35.30
	Midfielder	25	33.52	1.194	.239	33.03	34.01
	Forward	25	34.44	1.850	.370	33.68	35.20

The above table shows that the mean and standard deviation of calf girth for defenders, mid fielders and forwards were 34.52 ± 1.896 , 33.52 ± 1.194 and 34.44 ± 1.850 respectively. The table showed that there were differences between the mean of calf girth of defenders, midfielders and forward players. Based on the analysis, the calf girth of defenders had greater than the midfielders and forwards.

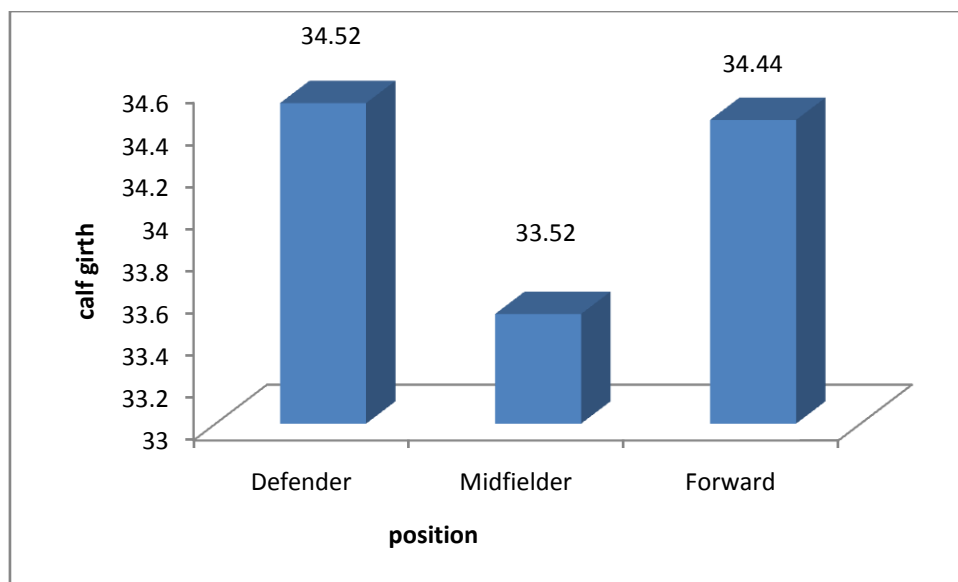


Fig.6 Comparison means scores of calf girth as anthropometric measurement between defenders, midfielder and forward.

Table 7: Comparison of mid-thigh girth between defenders, midfielder and forward

Variable	Position	N	Mean	Std. D	Std. Er	95% Confidence Interval for Mean	
						Lower B.	Upper B.
Mid-thigh girth (cm)	Defender	25	54.88	2.804	.561	53.72	56.04
	Midfielder	25	52.68	2.657	.531	51.58	53.78
	Forward	25	54.00	2.255	.451	53.07	54.93

Table 7 shows that the mean of mid-thigh girth for defenders, mid fielders and forwards were 54.88 ± 2.804 , 52.68 ± 2.657 and 54.00 ± 2.255 respectively. The table showed that there were differences between the mean of mid-thigh girth of defenders, midfielders and forward players. Based on the analysis, the mid-thigh girth of defenders had greater than the midfielders and forwards.

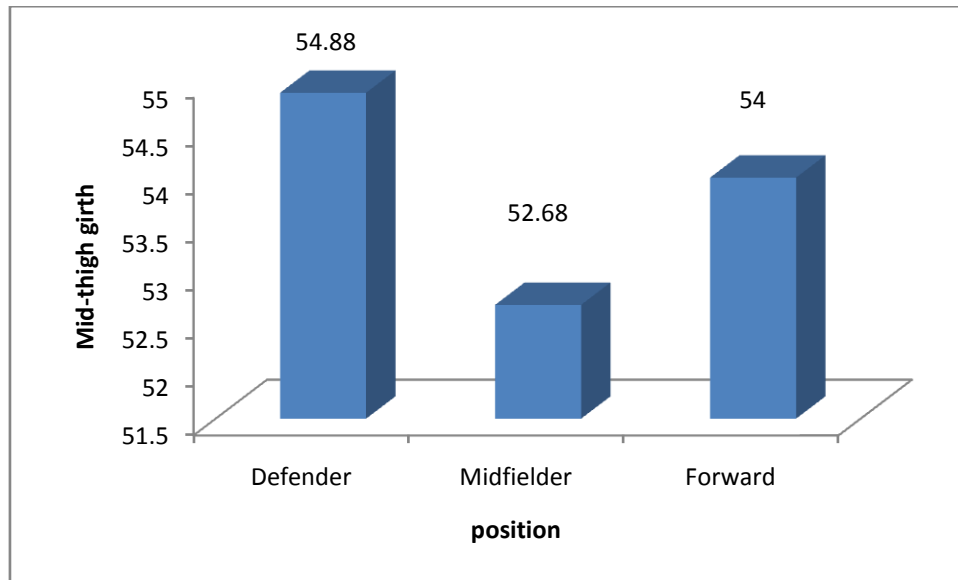


Fig.7 Comparison means scores of mid-thigh girth as anthropometric measurement between defenders, midfielder and forward.

II. DISCUSSION OF FINDINGS

The present study was to compare the selected anthropometric variables of youth football players. The result of the study shows that statistically significant differences in the anthropometric variables were found among the soccer players of different playing positions. It was demonstrated that significant differences between defenders, mid-fielders and forwards in foot length, upper leg length, lower leg length, and height and calf girth.

Based on the analysis of the data, the foot length of defenders was greater than the midfielders and forwards, as well as foot length of midfielders was greater than forward players. On the other hand, the upper leg length of midfielders was greater than the defenders and forward players and the lower leg length of forwards was greater than the midfielders and defenders. Furthermore, the weight and height of defenders were greater than the midfielders and forwards. In addition, the calf girth and mid-thigh girth of defenders were greater than the midfielders and forwards. This result was in line with many previous studies like (Naghbi & Madialagan, 2012, Singh & Singh, 2015, Bloomfield et al., 2007, and Dey et al., 2010). The study conducted by Singh, A., & Singh showed that there were significant differences in height between defenders and midfielders in football. But on the contrary, Subhasish Bhattacharya conducted a study on anthropometric measurement and the result of his study was in agreement with the present study. The results of the study indicated that defenders, mid-fielders and attackers had no significant differences in anthropometric measurements (Subhasish Bhattacharya 2003).

III. CONCLUSION

Based on the results, the following conclusion was drawn from the present study:

- Defenders had greater foot length than midfielders and forwards.
- Midfielders had greater upper leg length than the defenders and forward players.
- The lower leg length of forwards was greater than the midfielders and defenders.
- The weight and height of defenders were greater than the midfielders and forwards.
- The calf girth and mid-thigh girth of defenders were greater than the midfielders and forwards.

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