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Comparison Of Health-Related And Skill-Related Physical Fitness Status Of Elite Youth Under-17 Ethiopian Football Players Across Four Different Positions Of Play

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Abstract

The purpose of the current study was to investigate health-related and skill-related such as strength endurance, flexibility, and agility, speed physical fitness of elite youth under-17 Ethiopian football players across four different positions considered as fullback, center back, midfield, and striker. The current study employed a cross-sectional survey design with a purposive sampling technique to obtain the required data. Thus, 75 (62.5%) volunteer elite youth under-17 players were selected from five elite youth under-17 football clubs. There were statistically significant differences among positions of play in agility, $F(3, 71) = 2.92$, $P < .05$; flexibility, $F(3, 71) = 2.65$, $P < .05$; and speed, $F(3, 71) = 2.89$, $P < .05$. However, there was no statistically significant difference in strength endurance across four different positions of players. We suggest that Ethiopian elite youth U-17 football coaches should test and record fitness profile of players vis-à-vis their position of play and identify players' individual level of fitness in comparison to the demand of contemporary football game in general and their positions of play in particular.

Key words: Health-related; skill-related; physical fitness; under-17; Ethiopia; positions of play

Introduction

Football game is characterized by different body movements and motions such as turns and down; sprinting and running, changing directions of movement speedily and accurately, and pushing and charging activities in the upper part of the body (1,2,3). Hence, the application of these fundamental movements and motions depends on both health-related (flexibility and strength endurance) and skill-related (agility and speed) physical fitness qualities of players (4,5).

Indeed, health-related (HR) and skill-related (SR) physical fitness (PF) quality of players has been considered as one of the most important pillars together with technical, tactical, and psychological variables in contemporary football training. As a result, the level of players HR and SR related physical fitness could influence technical and tactical capacity of players (6,7).

Despite several studies has been studied on different PF variables of youth football players, the present study illustrates the differences in HRPF and SRPF status of elite youth U-17 players across fullback, center back, midfield, and striker positions of play on the field.

Statement of the problem

Physical fitness quality of players is one of the most important asset to succeed in contemporary football game. However, in the context of Ethiopia, fitness quality of elite youth U-17 football players have been found on its lower level vis-à-vis the demand of contemporary football game in general and positions of play on the field in particular. In relation to this, the study by (8), discussed so far the nature of trainings given in youth projects and sport academies of Ethiopia are mainly represents team training than individual training. As a result, players lack to acquire fitness attributes needed by their position of play on the field. Consequently, the present study was conducted to examine the differences in HRPF and SRPF status of elite youth U-17 Ethiopian football players across four different positions of play.

Therefore, the present study addressed the following basic research question:

What are the differences in health-related (flexibility and strength endurance) and skill-related (agility and speed) physical fitness differences across fullback, center back, midfield, and striker positions of play?

Objective of the study

The main objective of this study was to disclose the variance in both health and skill related physical fitness level of players across four different positions of play.

Methods

According to (9), validity concerned with the test and measurements in which the researcher wants to measure. Thus, in the present study, the tests and measurements used are important to measure the needed variables (content validity), helps to predict the outcome (criterion validity), and the theoretical knowledge of the researchers about the concept required to measure (construct validity) were encounter in this study.

Regarding the reliability of the tests and measures test-retest reliability was used to keep test scores (data) free of measurement errors (9). Hence, in the current study, test-retest procedure was administered to keep reliability of the data, and testes were administered in similar and comfortable conditions to keep validity of scores.

In order to gain useful information and develop detailed understanding about the topic under discussion, non-probability sampling technique, particularly purposive sampling was employed for this study (10). Thus, out of eight elite youth U-17 football clubs, five clubs were purposefully selected and 75 (62.5%) volunteered players selected from Adama Kenema (AK), Dire Dawa Kenema (DDK), Ethiopian Electric Corporation (EEC), Ethiopian Youth Sport Academy (EYSA), and St. George football clubs. Therefore, to achieve the objectives of the study and address the research questions, the study employed a cross-sectional survey design in harmony with purposive sampling.

Tests and data gathering procedures

The principal author was brief objective of the study and the required data, over the phone, to eight elite youth U-17 football club manegers. Hence, out of eight 2020/2021 elite youth U-17 Ethiopian premier league participant clubs, five (AK, DDK, EEC, EYSA, and St. George) were volunteered to

participate in the study. In honor of this, the principal author go to the clubs training fields and introduced together with major coaches and 75 volunteer elite youth U-17 football players were identified and program was arranged. Then, based on the information from their coaches and players own self-reported position of play, participants were categorized into four different positions of play: fullback (n = 20), center back (n = 20), midfield (n = 20), and striker (n = 15).

Thus, standardized fitness tests and measurements were used in the study to collect valid and reliable data for the study. Hence, Illinoi's Agility Run Test to identify their agility, Sit-and-reach Test for flexibility, 30-meter Acceleration Test for speed, and Standardized push-up Test for strength endurance were employed respectively (11,5,12,13,14,18). The procedural details of each standardized tests summarized as follows:

Illinois Agility Run Test (IART)

According to (11) and (12), IART is one of reliable and valid kinds of test for agility. Hence, players properly warm-up and stretch their body for about 15-minutes to minimize risk of injury and properly perform the test. Then, researchers demonstrate the test and participants perform the test as fast as possible.

Sit and Reach Test (SRT)

SRT is a valid and reliable test used to assess flexibility of back muscles, hamstrings, and general flexibility (16). Therefore, players were fully recovered within 5-minutes (11) from the above (30-m AT) and we demonstrate and let players to remove their shoe and sit on the floor, and then they had flexed from hip to reach forward and push their fingers along the table as far as possible (11,16).

30-meter Acceleration Test (30-m AT)

In the next day, players were properly warm-up and stretched their body within 12-minutes. Following the orientation of the researchers, they were sprinted to finish 30-meter marked dash. The test had three trials (3 x 30m) and 3-minutes were given between trials for full recovery (11). Finally, the fastest 30-m AT was selected for analysis.

Standardized Push-up test

Before administering the test participants were take a 5-minutes rest to recover from 30-m AT as well as observe the demonstration of the researchers how to perform standardized push-up properly. Whilst, participants performed the test sequentially; whereas, we count merely the numbers of successful repetitions in a 2-minute time period. Push-ups performed without reaching to the desired positions were not count and used for analysis (5).

Ethical considerations

After an approval of Bahir Dar University Sport Academy Ethical Review Committee (S/A/D 5768/11) to ensure that, the study did not involve players who were recently injured and there were no identifiable health risks on the participants of the study. Additionally, a 3-minute rest between similar and 5-minute rest between different tests were guaranteed for participants' to minimize risks of injury and increase reliability of the collected data.

Data analysis

In order to achieve the objectives of the study and answer the basic research question, the data was interred into SPSS version 21. Accordingly, one-way ANOVA using Scheffe's HSD was computed to disclose the variances in HRPF (strength endurance and flexibility) and SRPF (agility and speed) of players across fullback, center back, midfield, and striker positions of play.

Preliminary analysis

In this study, preliminary analysis was conducted primarily to confirm no violation of the three assumptions of ANOVA: assumption of independency, normality, and homogeneity (19). Thus, observations are independent (the value of one observation is not related to any other observation. In the test of normality, when Kolmogorov-Smirnov show a non-significant (> .05) result, the dependent variable is normally distributed (19). Hence, in the present study the result showed .20 and the dependent variable is normally distributed across each group. Likewise, for test of homogeneity of variance, if sig. > .05 for Leven's test it do not violated the assumption of homogeneity (19). In the current study, the value for Leven's test is .95 this means the assumption of homogeneity of variance is not violated. Hence, all the three assumptions of ANOVA were meet in this study.

Results

The purpose of this study was to see whether statistical significant difference was existed, among the four positions (fullback, center back, midfield, and striker) of players physical fitness, or not. Therefore, one-way ANOVA was computed and the results were presented in Table 1 and 2.

Table 1. Descriptive statistics for players' HRPF and SRPF test scores across four different positions (fullback, center back, midfield, and striker) of play.

Positions of play		N	M	S D	95 % C I	
					Lower B.	Upper B.
Agility	Fullback	20	16.72	.73	16.38	17.06
	Center back	20	16.58	1.04	16.19	17.07
	Midfield	20	16.29	.61	16.00	16.57
	Striker	15	17.23	1.35	16.48	17.98
	Total	75	16.67	.98	16.44	16.89
Flexibility	Fullback	20	6.00	4.16	4.05	7.95
	Center back	20	7.08	5.89	4.32	9.83
	Midfield	20	10.45	4.86	8.17	12.73
	Striker	15	7.73	5.90	4.47	11.00
	Total	75	7.82	5.38	6.58	9.06
Speed	Fullback	20	4.25	.35	4.08	4.41
	Center back	20	4.28	.31	4.14	4.43
	Midfield	20	4.11	.32	3.95	4.26
	Striker	15	4.42	.27	4.27	4.57
	Total	75	4.25	.330	4.18	4.33
Strength endurance	Fullback	20	30.10	12.50	24.25	35.95
	Center back	20	26.55	7.86	22.87	30.23
	Midfield	20	32.45	12.10	26.79	38.11
	Striker	15	31.47	11.54	25.07	37.86

	Total	75	30.05	11.14	27.49	32.62

Table 1 shows (mean, standard deviation, and the number of participants N) for (agility, speed, flexibility, and strength endurance) of players based on their positions (fullback, center back, midfield, and striker) of play. Thus, mean and standard deviation for agility of fullback (M = 16.72, SD = 0.73), for center back (M = 16.58, SD = 1.04), for midfield (M = 16.29, SD = 0.61), and striker (M = 17.23, SD = 1.44). The result of descriptive statistics indicated that the midfield playing position players demonstrated the fastest (16.29 Secs.) mean time score of agility test. The center back playing position players show the second fastest (16.58 Secs.) mean time score of agility test. The fullback playing position of players show the third fastest (16.72 Secs) mean time score of agility test. The striker playing position of players had shown the least (17.23 Secs.) mean time score of agility test.

In the same way, mean and standard deviation for flexibility of fullback (M = 6.00, SD = 4.25), for center back (M = 7.17, SD = 5.89), midfield (M = 10.45, SD = 4.95), and for striker (M = 7.73, SD = 5.90). The result of descriptive statistics indicated that midfield playing position players demonstrate the highest (10.45 Cms.) mean score of flexibility test. The striker playing position players show that the second highest (7.73 Cms.) mean score of flexibility test. The center back playing position players indicated that the third highest (7.17 Cms.) mean score of flexibility test. The fullback playing position players rivaled that the least (6.00 Cms.) mean score of flexibility.

Similarly, mean and standard deviation for speed of fullback (M = 4.25, SD = 0.35), for center back (M = 4.28, SD = 0.31), for midfield (M = 4.11, SD = 0.33), and for Striker (M = 4.42, SD = 0.35). The result of descriptive statistics indicated that midfield playing position players demonstrated the fastest (4.11 Secs.) mean time score of speed test. The fullback playing position players show the second fastest (4.25 Secs.) mean time score of speed test. The center back playing position players demonstrated that the third fastest (4.28 Secs.) mean time score of speed test. The striker playing position players show the slowest (4.42 Secs.) mean time score of speed test.

The mean and standard deviation for strength endurance of fullback (M = 30.10, SD = 12.50), for center back (M = 26.55, SD = 7.86), for midfield (M = 32.45, SD = 12.10), and for striker (M = 31.47, SD = 11.54). The result of descriptive statistics indicated that midfield playing position players demonstrated the highest (32.45 push-ups) mean score of strength endurance. The striker playing position players showed the second (31.47 push-ups) highest mean score of strength endurance. The fullback playing position players show the third (30.10 push-ups) highest mean score of strength endurance. The center back playing position players had shown the least (26.55 push-ups) mean score of strength endurance. However, the result also revealed that there was no statistically significant positional difference in strength endurance test results F = (3, 71) = 1.05, P > .05. Moreover, the summary of one-way ANOVA was computed and the results are presented in Table 2.

Table 2. One-way ANOVA comparing players' HRPF (flexibility, strength endurance) and SRPF (agility, speed).

		Sum of Squares	Df	Mean Square	F	Sig.
Agility	Between Groups	7.789	3	2.596	2.919	.040
	Within Groups	63.157	71	.890		
	Total	70.947	74			
Flexibility	Between Groups	215.799	3	71.933	2.651	.055
	Within Groups	1926.521	71	27.134		
	Total	2142.320	74			

Speed	Between Groups	.879	3	.293	2.893	.041
	Within Groups	7.191	71	.101		
	Total	8.069	74			
	Between Groups	390.353	3	130.118	1.051	.376
Strength endurance	Within Groups	8791.433	71	123.823		
	Total	9181.787	74			

One-way ANOVA was computed to examine the variance in HRPF and SRPF level of elite youth U-17 Ethiopian football players across (fullback, center back, midfield, and striker) positions of play as shown in Table 2.

There was a significant difference of agility among positions of play at P < .05 level for the four positions of play F (3, 71) = 2.919, P = .040. There was statistically significant difference of flexibility in between positions of play at P < .05 level among four positions of play F (3, 71) = 2.651, P = .041. There was statistically significant difference of flexibility in between positions of play at P < .05 level for the four positions of play F (3, 71) = 2.893, P = .05.

However, there was no significant difference was observed on one variable (strength endurance), F (3, 71) = 1.05, P = 0.376, which means P > .05. Post hoc multiple comparison of means using Scheffe's HSD was computed and the results are presented in Table 3.

Table 3. Post hoc Scheffe's HSD multiple comparisons for players' agility, flexibility, and speed across four different positions of play.

Variable		(I)positions of play	(J)positions of play	MD(I-J)	Std.error	Sig.	95% CI	
							LB	UB
Agility	Scheffe	Midfield	Striker	-.94*	.32	.04	-1.86	-.02
		Striker	Midfield	.94*	.32	.04	.02	1.86
		Center back	Striker	-.64*	.32	.05	-1.29	-.00
		Striker	Center back	.64*	.32	.05	.00	1.29
Flexibility	Scheffe	Fullback	Midfield	-4.45*	1.65	.01	-7.73	-1.17
		Midfield	Fullback	4.45*	1.65	.01	1.17	7.73
		Center back	Midfield	-3.38*	1.65	.04	-6.66	-.09
		Midfield	Center back	3.38*	1.65	.04	.09	6.66
Speed	Scheffe	Midfield	Striker	-.32*	.11	.05	-.63	-.00
		Striker	Midfield	.32*	.11	.05	.00	.63

*. The mean difference is significant at the 0.05 level.

In order to examine whether the real difference in fitness level of players was existed or not across four different positions of play, one-way ANOVA Post hoc Sheffe's HSD was computed. Hence, there was statistically significant agility difference at P < .05 level in IART scores among four positions of play: F (3, 71) = 2.92, P = .04.

The result revealed that the mean time IART score for midfield (M = 16.29, SD = .61) was significantly different from playing position of striker (M = 17.23, SD = 1.44), and the mean time IART score for center back (M = 16.58, SD = 1.04) was also significantly different from striker (M = 17.23,

SD = 1.44). However, players in fullback (M = 16.72, SD = .73) positions of play did not significantly differ from other positions of players. This result indicated that Ethiopian elite youth U-17 midfield players has fastest (16.29 Secs.) agility mean time score than other positions of players. On the other hand, Ethiopian elite youth U-17 striker position of players show the slowest (17.23 Secs.) agility mean time score than other positions of players.

There was a significant difference in flexibility level of elite youth U-17 players, as measured by Sit and Reach Test (SRT). There was a statistically significant difference at P < .05 level in SRT scores for the four playing positions: F (3, 71) = 2.65, P = .05. The mean SRT score for midfield (M = 10.45, SD = 4.95) was significantly different from fullback (M = 6.00, SD = 4.25) and center back (M = 7.17, SD = 5.89) positions of players.

Players in playing position of striker (M = 7.73, SD = 5.90) did not differ significantly from all positions of players. This result shows that Ethiopian elite youth U-17 midfield players are more flexible than other positions of play. On the contrary, fullbacks were less flexible than other positions of play.

Similarly, there was a significant difference in speed level of elite youth U-17 players, as measured by 30-meter Acceleration Test (30-m AT) (Pye, 2005). There was a statistically significant speed difference at P < .05 level in 30-m AT scores for the four playing positions: F (3, 71) = 2.98, P = .04. The mean time 30-m AT score for midfielders (M = 4.11, SD = .33) were significantly different from strikers (M = 4.42, SD = .35). Conversely, players in playing position of center back (M = 4.28, SD=.31) and fullback (M = 4.25, SD =.35) do not differ significantly from either midfield or striker positions of play. This result implies that Ethiopian elite youth U-17 midfield position players are faster than all positions of players, whereas strikers are also the slowest of all positions of play.

Discussion

The objective of this study was to reveal the variance in fitness (agility, flexibility, speed, and strength endurance) levels among four different (fullback, center back, midfield, and striker) positions of play. Hence, one-way ANOVA was employed to realize the objective of the present study.

One-way ANOVA using Scheffe's HSD was computed to test fitness variances among the four different positions of players. Therefore, statistically significant differences were observed for agility test results, F (3, 71) = 2.92, P = .040; for flexibility F (3, 71) = 2.65, P = .05, and for speed F (3, 71) = 2.98, P = .04.

. On the other hand, there was no statistically significant difference for fullbacks agility (M = 16.72, SD = .73), for strikers flexibility (M = 7.73, SD = 5.90), fullbacks speed (M = 4.25, SD = .35), and center backs speed (M = 4.28, SD = .31) against other positions of play.

Accordingly, the findings of the current study have indicated that significant agility differences among the four positions of players. There was statistically significant agility difference between midfielder and striker position of players. This result is supported by the previous findings of (13) as it suggests that midfield players need to have ability of performing appropriate movement to change and accelerate directions of movement and facilitating attack through creating links between defensive and offensive part of their team (2).

Taken together the findings suggest that midfielders should be more agile than other positions of players.

The findings of this study have also revealed that statistically significant agility difference between center backs and strikers. In this study, center backs show significantly short (fast) (M =

16.58, SD = 1.04) agility mean time score than strikers (M = 17.23, SD = 1.35). The result implies that center back position of players have short (fast) agility mean time score next to midfielders.

On the other hand, opposite to the study of (17) and (13), in the present study fullbacks (M = 16.72, SD = .73) showed better agility than strikers (M = 17.23, SD = 1.35), but there was no significant difference between them.

In contrast to the findings of (13), the strikers in this study had low level of agility than center back and fullback players. Moreover, they have significantly low level of agility compared with midfield and center back position of players. This implies that strikers have difficulty of changing their directions of movement with acceleration among opponents defense and score a goal. Therefore, Ethiopian elite youth U-17 coaches should design trainings to improve agility of strikers.

The technical and tactical nature of the contemporary game let players to perform different body movements and motions; therefore, players must have good range of flexibility to ensure efficient body movements and motions while executing different techniques and tactics without muscle and joint injury (4,5,12).

In relation to this (2) indicated that movements to different directions to defend and facilitating attack, jump and slide, falling and ups were the most frequent actions performed by midfielders. This suggests that midfield players should be more flexible than other positions of players.

The result of this study has also revealed that midfield position players show better range of flexibility than all positions of outfield players. The result (M = 10.45, SD = 4.86) was significantly different form fullbacks (M = 6.00, SD = 4.16).

In this study, strikers (M = 7.73, SD = 5.90) had shown slightly better range of flexibility than fullback (M = 6.00, SD = 4.25) and center back (M = 7.17, SD = 5.89) position of players, but there was no significant difference among them. Thus, conditioning coaches should be incorporate trainings that helps to improve flexibility level of striker position of players.

The current study has revealed that fullbacks show the list range of flexibility than other positions of players. Moreover, they have significantly low (M = 6.00, SD = 4.16) range of flexibility than midfielders. This shows that fullback position of players has low range of flexibility than other positions of players. Similarly, they have below average range of flexibility. These results suggested that more attention to improve flexibility of fullback position of players.

In contemporary football game ability of players to perform repeated sprints are an important asset for the team while performing both the technical and tactical aspects of the game (13,18). Additionally, having an excellent sprinting skill and speed are indicators of strength and good range of motion around the muscles and tendons (Mokhtari and Rostami as cited in 18).

Study by (13) designated that midfielders cover more distance at high intensity than center backs and forwards. Furthermore, (2) indicates that midfielders perform the maximal sprints next to strikers. These findings suggested that speed is one of the most important fitness qualities, which is expected from midfielders in the contemporary football game.

Likewise, the findings of this study have revealed that midfielders showed short sprinting time than other positions of players. Midfield players showed significantly fast (M = 4.10, SD = .33) sprinting time than strikers (M = 4.42, SD = .27).

Speed and sprinting skill are most important fitness qualities used for fullbacks while dribble and pass opponent players along the line to facilitate attack (12). Similarly, the findings of this study has showed that fullbacks had somewhat fast (M = 4.24, SD = .35) sprinting time compared with center backs and strikers, but there was no statistically significant speed difference among them.

Similar to the study of (13), this study discovered that center back players had long sprinting time (M = 4.28, SD = .31) than midfield and fullbacks. However, similar with the study of (20) they had short sprinting time than striker position of players.

Striker position players expected to score more goals than other position of players, so they need to have high explosiveness and speed (13). However, in this study, it was observed that strikers had significantly long sprinting time than midfield players. Besides, their result (M = 4.42, SD = .35) revealed that they were slower than fullback and center back players. The result of current study shows that striker position of players are slower than other positions of players.

This result suggests that they have difficulty of winning a passed ball while competing (sprinting) against opponents' defense. Thus, Ethiopian elite youth U-17 coaches should be design and plan trainings to improve speed of strikers.

Several studies indicated that midfield position players cover the longest distance throughout the 90 minutes of playing time (1,2,3,13). Thus, midfielders are considered as the spinal cord of their team, they involve in both offensive and defensive tasks, and they used as a channel to connect the defensive part of their team with strikers. Additionally, they encompassed from low to sub-maximal intensity activities for long duration of play than other position of players (2,13).

Indeed, players particularly midfielders need to develop muscles, which can perform repeated actions throughout the game (4). Similarly, in this study, midfield position players show best strength endurance of upper part of the body than other positions of players, but there was no statistically significant difference across four positions of play.

The objective of football game is scoring more goals than opponent team as well as defending opponents attack using several techniques such as pushing in the upper part of the body (2). This technique let strikers to apply either wrong kicks to the goal or passes to the teammate. Hence, strikers must have ability of resisting such frequent technical upper body pushes and pulls performed by opponent defense through the improvement of upper body strength endurance.

Likewise, findings of the current study shows that strikers had better (M = 31.47, SD = 11.54) strength endurance of upper part of the body than fullbacks and center backs, but there was no significant differences were observed. These results indicates that Ethiopian elite youth U-17 striker position players have better strength endurance than fullback and center back position of players.

Fullback position players are typically known as defensive players together with center back players, whereas usually they facilitated and involved in attacking role of the team (1,13). In addition, fullbacks together with midfield position players cover the longest distance in football game (3,13). Moreover, fullback players exposed to most physical contacts at high intensity with repeated and several pushes and pulls in the upper body (2). This suggests that players in fullback position should develop better upper body strength endurance than center back and striker position of players.

However, in this study fullbacks had slightly low (M = 30.10, SD = 12.50) strength endurance compared with midfielders (M = 32.45, SD = 12.10) and strikers (M = 31.47, SD = 11.54) but they had slightly better strength endurance than center backs.

Regarding center back players their role was usually involved in defending the center back position of their team as the name indicated; whereas they support their teams attack usually during corner and free kicks (2). Moreover, to cope-up and resist with repeated upper-body or shoulder pushes of strikers to defend the goal (2).

Conversely, in the present study, it was observed that center back position players had the least (M = 26.55, SD = 7.86) level of upper body strength endurance compared with midfield, striker and fullback players. However, there was no statistically significant differences across the four positions

of players. This result suggests that center back players should improve upper body strength endurance as far as their role is concerned.

In general, similar to the findings of (13), the dominant performance of midfield position players across all fitness variables might be related with seniority and years of experiences as the first choice of their coach as a player in their club. However, it needs further study together with large sample of participants as well as using other instruments such as MRI to identify an exact age of participants and generalize the result in the context of Ethiopia.

Conclusions

The findings of this study has showed that statistically significant agility, speed, and flexibility differences across (fullback, center back, midfield, and striker) position of players. However, there were no statistically significant strength endurance differences across four positions of players. In this study midfielders showed significantly short agility and sprint speed time, whereas strikers also demonstrated significantly long agility and sprinting speed time than all positions of players. Center back and fullback position players were also shown the second and third fastest mean time score of agility respectively. Additionally, fullback position players showed the second fastest sprinting time followed by center backs. Likewise, midfield position of players was demonstrated significantly better range flexibility, whereas fullbacks had significantly lower range of flexibility than other positions of players. Furthermore, midfielders show the highest strength endurance of upper-part of the body followed by strikers and fullbacks respectively, whereas center back position players were show the least level of strength endurance of upper part of the body.

Based on the conclusions derived from the findings of the study showed so far, the following recommendations were made as possible ways of curbing the problems observed:

- In order to develop players who are capable of executing the technical and tactical strategies of modern football, the combination of both SRPF (agility and speed) and HRPF (flexibility and strength endurance) has a direct impact on players' performance. Consequently, Ethiopian elite youth U-17 football coaches should test and record fitness profile of players vis-à-vis their position of play and identify players' individual level of fitness in comparison to the demand of contemporary football game in general and their positions of play in particular.

Limitations of the study

Although an intensive quantitative data was collected on HRPF and SRPF of 75 elite youth U-17 football players, the result of this study is generalized to only (elite youth U-17 clubs who have been participated in U-17 Ethiopian Premier league). Thus, further study needs to include other HRPF and SRPF as well as youth U-17 football projects.

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Conflicts of interest

The authors of this article declared there is no conflicts of interest that could be interfered with the publication of this article.

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