

Survey Study on Some Selected Physical Fitness Components of Kaffa Zone Male Youth Soccer Trainees

Ayele W/MARIAM

Lecturer in Department of Sport Sciences, Bonga College of teacher education, Bonga, Ethiopia

MD Babul AKHTAR

Assistant Professor in Department of Sport Sciences, Jimma University, Jimma, Ethiopia

Biruk Amare SORATE

Lecturer in Department of Sport Sciences, Jimma University, Jimma, Ethiopia

Abstract

The main objectives of this study was to assessing some selected physical fitness components of male youth soccer trainees in the case of Kaffa zone football projects. There are four male youth (junior) soccer projects especially, Bonga town, Gimbo , Chena and Gesha woredas. 80 trainees' was selected by using Krejcie and Morgan's (1970) table for determining sample size for a given population and probability simple random sampling was used a 'lottery' method. Cross-sectional study design was used because the subjects were tested once. Some selected physical fitness variables were body mass index (BMI), speed (60-meter test), strength (sit- ups test), Agility (Illinois run test)and flexibility (sit and reach test) of the trainees'. Anthropometrics characteristics and performance physical fitness data that has obtained from 80 male youth soccer trainees and Quantitative methods have analyzed by using One-Way ANOVA approach. All anthropometrics characteristics of youth soccer trainees' are in the adolescent stages, therefore, almost woredas were related characteristics status. Results showed a significant improvement in the projects trainees fitness level of speed ($p=0.000$) and agility (0.001), but no significant in other fitness variables on strength ($p=0.493$) and flexibility ($p=0.637$). The study of Kaffa zone male youth soccer trainees' fitness level (status) has BMI (19.88) normal weight, Illinois run test (18.20) below average and sit-up test (19.79) below average compared to among the international normative data but flexibility (sit and reach test) 12.74 cent-meters were in the range of above average. Kaffa zone male soccer trainees' projects and compared normative data would be providing to information about the selected fitness status to their trainees' and coaches. This information may use to help the selected fitness level bridge gaps between their field and other fields within the sport-concerned body. Therefore, results of this study may do provide normative data for coaches, trainers and Kaffa zone sports office working with youth soccer trainees.

Keywords: soccer, physical fitness, trainees', body mass index, speed, strength, agility, flexibility.

INTRODUCTION

Soccer is the most popular sports in the world. An estimated 100 million registered players exist worldwide in men's, women's, youth and veteran competitions, with many millions more playing non-organized football (Reilly, 1997). Soccer growth in popularity over the past 20 years has seen a similar increase for research conducted in all fields of sports science (Reilly & Gilbourne, 2003). Soccer has developed at the elite, level much research regarding match performance and training has been conducted (Bangsbo, *et al.*, 2006). As soccer is a team sport, an efficient organization of the team is required for the optimal development of players' abilities, the control of opponents, and the success full resolution of a match. Players has placed in certain positions to fulfill specific tasks Stroyer, *et al.*, (2004). In recent years, several professional football schools was established for the education of young players around the world, especially in European countries (Stroyer *et al.*, 2004) that indicates the growing soccer among youth in the world. The focus on youth soccer and the emphasis on identifying and developing young talent at an early age have grown dramatically over recent years (Stratton *et al.*, 2004).

Soccer-specific activities such as tackling, heading, passing, shooting, controlling the ball, maintaining balance and holding body position when under defensive pressure, jointly comprise the physical demands of the sport (Stolen *et al.*, 2005). The number of changes in modern football has postulated to be greater than previously report, because it is generally, accepted that the game is continuously becoming faster and more athletically challenging than before (Al-Hazzaa *et al.*, 2001).

Physiological test used as a guide to potential 'successful performance' in soccer, and can especially be used as a monitoring tool to determine individual's status at a given time (Reilly *et al.*, 2000). Most high-level players (Apor 1988, and Mohr *et al.*, 2003) share some physiological characteristics. Athletic performance in soccer is a function of aerobic fitness, anaerobic fitness, speed, muscular strength, muscular power, and agility.

Physical fitness is an important part of life. It is an indicator, which shows whether you have the ability to perform and enjoy day-to-day physical activities with ease. It is generally, achieved through physical activity

and exercise, correct nutrition, enough rest (good quality sleep), Stress management and relaxation (Kemi *et al.*, 2003). Fitness is important at all levels of the game, whilst being essential for top-level players; it is beneficial for beginners who will improve both their effectiveness and enjoyment through good standards of fitness. Fitness testing provides feedback to athletes and coaches on how the athlete is developing their various components of physical fitness. A coach can then compare the results of the tests to where they will like their athlete to be at that particular stage of their training program (Gabbett *et al.*, 2007).

To succeed in elite soccer, players require a high level of physical fitness to cope with the demands of the game and to allow their technical and tactical skills to be used to their full throughout a match (Reilly, 1997). Thus, this study hypothesis, that Kaffa zone male soccer trainees may or may not have a good physical fitness status. Therefore, the purposes of this study has been to assess some selected physical fitness levels of Kaffa zone male youth soccer trainee's and it was to find out to investigate of selected variables on male youth soccer trainees.

METHODOLOGY

Study Design and Area

A cross-sectional approach has used in this study with the specific nature of the research design based on field fitness test. It has used to measure the status of youth soccer trainees' in Kaffa zone male soccer projects. Kaffa Zone is located in southwestern Ethiopia and Bonga town is located 449 km Southwest of Addis Ababa and 80 km of Jimma.

Subjects

All of the selected participants have been included as study population those who are Kaffa zone male youth soccer projects and volunteer to participate in this study. Among the total 100 trainees' 80 trainees' was selected by using Krejcie and Morgan's (1970) table for determining sample size for a given population and probability simple random sampling was used a 'lottery' method.

Source of Data

The researcher was used primary sources of data because of the identify problem feature. The primary data was been taken from field selected fitness test variables according to the designed parameters but the secondary data were obtained from different secondary sources such as international standards of youth soccer fitness tests documents.

Methods and Procedures of Data Collection

Cross-sectional data was collected through anthropometric test like height, and body mass index (BMI) to know the characteristics of the youth soccer and through physical fitness tests; speed (60-meter speed test), Strength (Sit-ups test), Agility (Illinois Agility Run Test), and sit and reach test to measure flexibility. The quantitative data has used with each projects result of youth male soccer fitness tests and it has used to compare the results of fitness level with each projects and standards.

Body mass index (BMI) is the relative amount of fat, muscle, bone, and other vital parts of the body. Moreover, it is a measure of relative weight based on an individual's mass and height. The course of developing "social physics" it is as the individual's body mass divided by the square of their height with the value universally being given in units of kg/m² (Mackenzie, 2005).

Speed (60-meter speed test): is the ability of a muscle group to exert force. Multiple tests must be completed to test more than one muscle group. Soccer players require strength in both the lower and upper body. Nearly every movement in the game from kicking, to tackling, to twisting and turning, sprinting and heading, requires a good foundation of strength and power (Mackenzie, 2005).

Strength (Sit-ups test): is as the capability of the muscles to lift weight. It is the ability to perform a movement within a short period and the ability to more a light resistance for an extended period. There are many different types of speed, which including running and speed of hand, or foot movement. It is clear that different events/sports need different 'strength' and different 'strength' needs different training methods. To measure a player's strength accurately it is important to conduct a few different assessments .One measures maximal or basic strength (Mirkov *et al.*, 2008).

Agility (Illinois Agility Run Test): is the ability to change and control the direction and position of the body while maintaining a constant, rapid motion. Agility is the ability to change direction accurately and quickly while moving rapidly (Hockey, 1977; Johnson & Nelson, 1997).

Flexibility (Sit and reach test): is simple defined as “The range of motion about a joint.” However, there are three different types of flexibility and some are more relevant to soccer than others are...training can release tightness and promote the relaxation leading to quicker contraction. Increasing the range of motion also helps to lengthen leg stride and is important for quick and agile changes in direction. If muscles can apply force over a greater range of motion, this also helps to increase speed and power. The sit and reach test is the most commonly used flexibility test. It measures the range of movement in the lower back and hamstrings.

Methods of Data Analysis

Descriptive statistics has used to report normative data. Descriptive statistics (mean ± SD) were calculated on all test results by one-way ANOVA. The results of data collected through body mass index (BMI), 60-meter speed test, strength (sit- up) test, Illinois Agility Run Test, and flexibility (sit and reach test) interpreted using descriptive statistics. The levels of significance were set at $p < 0.05$ and the data has presented in the following main heading by using SPSS 20-software version.

RESULTS ANDDISCUSSION

Anthropometric characteristics of mean scores ± standard deviations results.

		Sum of Squares	Df	Mean Square	F	Sig.
Age	Between Groups	0.437	3	0.146	0.597	0.619
	Within Groups	18.55	76	0.244		
Height	Between Groups	0.031	3	0.01	6.23	0.001
	Within Groups	0.124	76	0.002		
Weight	Between Groups	144.184	3	48.061	3.12	0.031
	Within Groups	1170.788	76	15.405		
BMI	Between Groups	3.851	3	1.284	1.069	0.367
	Within Groups	91.261	76	1.201		

According to the above table 2, the Kaffa zone male youth soccer trainees' projects and their anthropometric characteristics result has analyzed by one-way ANOVA.

The analysis of variance (ANOVA) test, revealed that there was no significant differences on score of age test in relation to trainees projects fitness level, $F (3,76)=0.597$, $p > 0.05$ or $p=0.619$.

As illustrated in table the analysis of variance (ANOVA) test also revealed that there was a significant differences mean score of height test at least in one pair , $F (3,76)=6.230$, $p < 0.05$ or $p=0.001$.

However, in table, the analysis of variance (ANOVA) test also revealed that there was a significant differences mean score of Bonga on weight at least in one pair , $F (3,76)=3.120$, $p < 0.05$ or $p=0.031$.

As table illustrated that, the analysis of variance (ANOVA) test, revealed that there was no significant differences on score of body mass index (BMI) test in relation to woreda projects trainees fitness level, $F (3,76)=1.069$, $p > 0.05$ or $p=0.367$.

Physical Fitness Tests Result and Discussion

ANOVA Table of some selected fitness variables result

		Sum of Squares	Df	Mean Square	F	Sig.
Speed	Between Groups	72.862	3	24.287	10.741	0.000
	Within Groups	171.846	76	2.261		
Strength	Between Groups	12.738	3	4.246	.809	0.493
	Within Groups	398.650	76	5.245		
Agility	Between Groups	18.870	3	6.290	10.413	0.000
	Within Groups	45.910	76	.604		
Flexibility	Between Groups	19.534	3	6.511	.570	0.637
	Within Groups	868.463	76	11.427		

As indicated in table analyses have showed that, the one-way ANOVA of mean score speed (60-meter test) of youth soccer trainees revealed that there was a significant differences mean score of Chena on 60-meter test at least in one pair , $F (3,76)=10.741$, $p < 0.05$ or $p=0.000$.

As indicated in the table there was no significant differences on score of sit-up test in relation to project trainees' fitness level, $F (3,76)=0.809$, $p > 0.05$ or $p=0.493$. Thus, the researcher has concluded that the sit-up test was similar trainees' fitness level in all youth soccer projects.

The table also showed that, there was a significant differences mean score of Chena on Agility (Illinois run test) at least in one pair , $F (3,76)=10.413$, $p < 0.05$ or $p=0.000$.

The table is also indicated that there was no significant differences on score of sit and reach test in relation to woreda projects trainees fitness level, $F (3,76) = 0.570$, $p > 0.05$ or $p=0.637$.

Discussion

In the present study, anthropometric characteristics and fitness performance status have compared across four projects trainees in Kaffa zone-based junior youth soccer trainee'. The purpose of this study was to determine, what some selected physical fitness components of anthropometric characteristics, mean scores soccer trainees fitness performance level (status) and to compared average mean scores of trainees fitness status with standard of normative data.

Physical fitness components of, speed (60-meter test), strength (sit- ups test), Agility (Illinois run test) and flexibility (sit and reach test) tested in the study, a significantly ($p < 0.05$) greater mean score through the trainees fitness test results.

There were significant improvements in speed (60-meter test) for both Bonga and Gesha projects trainees. The training for this study used the interval training method in order to improve speed. Interval training has produced similar results (Dupont *et al.*, 2004) in regards to significantly faster 60-meter sprint times..

The hypothesis that Kaffa zone youth soccer trainees' physical fitness would improve selected fitness components have fully supported by the current data. Weiss.T *et al.*, (2010) found similar results in 7-weeks of functional training resistance training on muscular fitness outcomes in young adults. Therefore, the present study was different from Weiss.T *et al.*, (2010) by the types of exercise whereas duration of training but similar in youth soccer.

The hypothesis that Kaffa zone youth soccer trainees' physical fitness status, there would be no significant difference on body mass index (BMI), strength (sit- ups test) and flexibility (sit and reach test) in all selected projects. This hypothesis was supported by the study.

There would be no significant difference between Gimbo and Gesha projects trainees in Agility (Illinois run test). This hypothesis was supported by the study.

The first true CRS were developed in 1978 for the South Carolina Physical Fitness Test (Pate, 1983). Currently, as part of the Presidential Youth Fitness Program, all fitness test results have evaluated against CRS and students who score in the CRS healthy fitness zone in five out of six fitness tests are eligible to be recognized with the Presidential Youth Fitness Award.

The other main finding of the present study is significant speed and agility of the soccer trainees. This result is supported by Little and Williams (2009) and Paolo *et al.*, (2000) findings and is rejected by the results of Buttifant *et al.*, (1999) and Little and Williams (2003). One of the possible reasons for differences between the present results with other researches can be professional or elite soccer players and the sex difference; because Buttifant *et al.*, (1999) research were conducted on Australian football players. However, the present study was conducted on some selected physical fitness components of Kaffa zone male youth soccer trainees and the current review literatures are related with some degree or extent. Therefore, it should be consider that the nature of agility movements is very close to the speed.

The results of the current study identified specific improvements over the majority of the fitness variables components were sit-up test, Illinois run test, 60-meter run test, and sit and reach test. Table 8 shows that the Illinois run and sit-up fitness level, average means scores and standard deviation both less than two or three step gaps from the norm data. The reason for the determining might be attributed to the fact that the selected functional exercises have significant influence on speed and Illinois run test.

Conclusion

From the analysis of the data the following conclusions are drawn:

In conclusion, the prevalence of normal weight among the participants was similar with what have observed in general selected projects trainees.

All anthropometrics characteristics of youth soccer trainees' are in the adolescent stages, therefore, almost woredas were related characteristics status.

The current study was concluded that Kaffa zone male youth soccer trainees' fitness level (status) were improving for better success of soccer.

Speed (60-meter run test), agility (Illinois run test) and strength (sit-up) tests of Chena trainees' projects average mean score were better than the Bonga, Gimbo and Gesha trainees' projects.

There were significant improvements in Agility (Illinois run test) for both Gimbo and Gesha projects trainees. There were no significant differences between Gimbo and Gesha in Agility (Illinois run test).

Flexibility (sit and reach test) of Gesha trainees' projects average mean score were better than the trainees' projects of Bonga, Gimbo and Chena.

There were significant improvements in speed (60-meter test) for both Bonga and Gesha projects trainees. There were no significant differences between Bonga and Gesha in speed (60-meter test).

There would be no significant difference between Bonga and Gesha in speed (60-meter test). This hypothesis was supported by the study.

Results of statistical analysis of data showed that there is a significant between subjects' speed and

agility in Chena projects trainees. Because the nature of the speed and agility is based on the fast and explosive movements and the agility and speed capacity can increase over the age of under-17 years, and the study subjects were in this age duration, so the significant between speed and agility could be expected.

The study of Kaffa zone male youth soccer trainees' fitness level (status) has BMI normal weight, Illinois run test below average sit-up test below average and flexibility above average when compared to among the international normative data.

Agility Illinois run test and strength (sit-up) were reveals significant improvement on some selected physical fitness variables when compared to the normative data.

Results showed a significant improvement in the projects trainees' fitness level.

Recommendation

From the results of the study the following recommendations has been collected and discussed in this study as followed:

The present study have been recommended to Kaffa zone male youth soccer trainees on agility fitness level, the concerned sport body, trainees, coaches were bring modern quality of coaching concept and changing training program to increase in the scientific way to adopt this training to improve one of the selected physical fitness.

The similar study may be conducted on male youth soccer trainees'.

Those youth soccer trainees who scored less than average in the some selected Physical Fitness Test should be given special attention by the Kaffa zone sports office concerned body, coaches and trainees in order to get them more involved in physical activities. This is indicated by their below-average scores, which show the need for an increased level of exercise.

The similar study may be conducted for youth soccer under-17 age category.

Similar research work may be attempted by using some selected physical fitness variables.

Studies should involve more speed (60-meter test) and agility (Illinois run test) tests were may add more credibility to the study. Another possible study would be to find project trainees' physical fitness status if there are varies between the tests.

Kaffa zone male soccer trainees' projects and compared normative data were used this information to provide information about the selected fitness status to their trainees' and coaches. This information may be used to help the selected fitness level bridge gaps between their field and other fields within the sport-concerned body.

Acknowledgments: This study would not have been possible without funding support MOE. The authors also thank the participants of the study.

Conflict of interest: The authors declare that; have no conflict of interest.

REFERENCES

- Al-Hazzaa, H.M., Almuzaini, K.S., and Al-Refeae, S.A. (2001). Aerobic and anaerobic power characteristics of Saudi elite players. *Journal of Sport Medicine and Physical Fitness*, vol. (41), pp; 54 – 61.
- Apor, P. (1988): Successful formulae for fitness training. In Reilly, T., Lees, A., and Davids, K. (Eds.) *Science and Football* (pp; 95 – 107), London: E & FN Spon.
- Bangsbo, J., Mohr, M. and Krstrup, P. (2006). Physiological and metabolic demands of training and match play in the elite football player. *Journal of Sports Sciences*, vol. (24), pp; 665 –674.
- Buttifant, D., Graham, K., & Cross, K. (1999). Agility and speed in soccer players are two different performance parameters. Paper presented at the Science and Football IV Conference, Sydney, NSW.
- Dupont, G., Akakpo, K., & Berthoin, S. (2004). The effect of in-season, high-intensity interval training in soccer players. *Journal of Strength and Conditioning Research*, vol. (18), pp 584-589.
- Gabbett T, Kelly J, Pezet T (2007) Relationship between physical fitness and playing ability in rugby league players. *J Strength Cond Res*, vol. (21), pp; 1126-1133.
- Hockey, R. V. (1977): Physical fitness the pathway to healthful living. St Louis, MO, C.V. Mosby.
- Johnson and Nelson (1997): Physical fitness and health-related fitness as indicators of a positive health state.
- Kemi O, Hoff J, Engen L, Helgerud J & Wisloff U (2003): Soccer specific testing of maximal oxygen uptake. *Journal of Sports Medicine & Physical Fitness* vol. (43), pp; 139-144.
- Krejcie and Morgan's, (1970) article "Determining sample size for Research Activities"
- Mackenzie B., (2005): 101 performance evaluation tests. Electric Word plc
- Mirkov, D.M., Nedeljković, A., Kukulj, M., Ugarković, D., & Jarić, S. (2008). Evaluation of the reliability of soccer-specific field tests. *Journal of Strength and Conditioning Research*, vol. (22), pp; 1046–1050.
- Mohr, M., Krstrup, P. and Bangsbo, J. (2003). Match performance of high standard soccer players with special reference to development of fatigue. *Journal of Sports Sciences*, vol. (21), pp; 519 – 528.
- Reilly T, Gilbourne D. 2003. Science and football: a review of applied research in the football codes. *J Sports Sci*. 2003 Sep;21(9):693-705

- Reilly, T., Bangsbo, J. and Franks, A. (2000). Anthropometric and physiological predispositions for elite soccer, *Journal of Sports Sciences*, vol. (18), pp; 669-683.
- Reilly, T., (1997).The stability of fitness factor over a season of professional soccer as indicated by serial factor analysis. *Kin anthropometry 11* (Eds M. Ostyn, G.Beunen and J. Simons), University Park Press, Baltimore, pp; 245.
- Stolen, T., Chamari, K., Castangna, C. and Wislof, U. (2005) *Physiology of Soccer: An Update*. Sports Medicine, vol. 6 (35), pp; 501 – 536.
- Stratton, C., & Reid, M. J. and Hammond, M. (2004). Treating Children With Early-Onset Conduct Problems: Intervention outcomes for Parent, Child, and Teacher Training. *Journal of Clinical Child and Adolescent Psychology*. vol.33, no.1, 105-124.
- Stroyer, J., Hansen, L. and Klausen, K., 2004, Physiological profile and activity pattern of young soccer players during match play. *Medicine and Science in Sports and Exercise*, vol. (36), pp. 168-174.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

