COMPARATIVE ANALYSIS OF SELECTED MOTOR FITNESS PROFILE OF FOOTBALL REFEREES IN CROSS RIVER AND AKWA IBOM STATES, NIGERIA.

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Abstract

The purpose of this study was to compare selected motor fitness profile of football referees in Cross River and Akwa Ibom States. Motor fitness profiles compared were running speed and agility of the referees. Standardized equipment and procedures were employed in the tests. To achieve the objectives of the study, two research hypotheses were raised to serve as a guide to the study. The quasi-experimental research design was adopted for the study. A total of twenty (20) subject were selected using stratify random sampling technique. Data collected were analysized using descriptive and inferential statistics. The descriptive statistics were the mean, range and standard deviation while the inferential statistic was the independent "t" test employed to test for significant difference between the mean scores of subjects from the two states. The level of significance was set at .05 with 18 degree of freedom. Findings of the study revealed that referees from Cross River and Akwa Ibom States were similar in running speed and agility when compared. Based on these findings of the study, appropriate conclusions and recommendations were made.

Keywords: Motor Fitness Profile and Football Referees.

Introduction

A referee is the umpire who must have special knowledge of the rules and regulations in association football. The media coverage and difficulty of the job of the referee has increased dramatically over the years. Indeed, match analysis has shown that in 2006 World Cup, 15.4% referee's decisions were apparently wrong. Similarly, in 2010 World Cup, 26% of offside decisions were wrong when closely examined using TV images. Referees have been shown to have to make a decision every 40 seconds at the top level (http:/www.soccer performance.org/html/home.htm, 2011).

Physiological and motor performance skills such as cardiovascular endurance, muscular endurance, and muscular strength, resting heart rate, blood pressure, speed, agility and mental skills such as visual perception, attention, concentration, composure and decision-making are all required by referees at any level of the game. The ability to cope with the pressures of refereeing had increased. As referees are required to keep up with the game, they are likely to suffer from physical fatigue and this will no doubt affect their physiological, motor and mental performance and hence decision making. (http:/www.soccer performance.org/html/home.htm, 2011).

The responsibilities of soccer referees are to control players' behaviour and implement the rules of the game during competitive football. These place strenuous task on the referee's speed performances as well as bio-physiological functioning. The Nigerian Soccer Referees are always seen to have good speed performance when officiating in the National Professional League competitions but were not seen at International levels (Abass, Moses, Alabi, Adedugbe, Falolas & Abayomi, 2011). Asagba (2004) established that officiating officials in soccer have some moments of robust runs and sudden stoppages, intermingled with uneven walks and shuttles in

different directions. Abass (2005) supported that; aerobic ability cannot see a soccer referee through successfully in ball games because of these frequent changes of space and need for sudden sprints. Sumiya, Tashima, Nakahara, and Shohoji (2001) submitted that attempt for referees to carry out their functions demands for maturity in terms of age, a biological parameter. They added that age poses strenuous task on the cardiorespiratory functioning of any individual and mostly referees and that soccer referees must be reaching and maintaining a high level of fitness. In this direction, therefore, referees must maintain a constant training programmed from time to time as they mature with officiating age. Asagba (2004) contributed by saying that, a soccer referee is supposed to be within 10 to 15m range from the ball at any time during play. Baumhakel, Kindermann, Kindermann and Bohn (2007) submitted that referees should have good physical condition as requirements during a match.

Football, or soccer as it is known in America, is one of the most important sports today. According to Rainea (2005), the most famous Romanian referees, football is not only what you see on the pitch, the fight between two teams for victory, but also it is a passion; it is a sophisticated machine which brings together energies, people, money and a huge amount of diplomacy.

Literature Review

Running speed is a motor performance quality which is utilized in almost all athletic performances. It plays a very important role in determining a winner in races, swimming, court and field games where split second decision could change a situation to ones advantage. Due to its wide utilization Jones and Rikli (2002) were able to identified three different forms of speed. These are speed of movement of body segments, running, acceleration speed and maximal running speed.

They said that speed of movement is a specific quality which is specific to regions of the body. Running speed, which could be discussed in terms of rate of acceleration and maximal velocity, involves the movement of the body as a whole. The first factor is related to how fast a person can increase his rate of speed and is mostly utilized in short distances and in court and field games such as hockey, soccer, tennis, etc, in which moving quickly from one location to another is an advantage as well as in dogging or avoiding an opponent. For long distances, maximal running speed is more important than acceleration speed. The two situations are common in soccer refereeing and therefore a high level of both forms of running speed is necessary for effective performance.

According to Davis (2000), motor fitness refers to the ability of an athlete to perform successfully at their sports and defined speed as the ability to move quickly across the ground or move limbs rapidly to grab or throw. He stated that, running speed is not just how fast someone can run (or cycle, swim, etc) but is dependent on their acceleration (how quickly they can accelerate from a stationary position) maximal speed of movement, and also speed maintenance (minimizing deceleration). He went further and said that, movement speed requires good strength and power, but also too much body weight and air resistance can slow the person down. In addition to a high proportion of fast twitch muscle fibres, it is vital to have efficient mechanics of movement to optimize the muscle power for the most economical movement technique. He concluded that running speed is one of the main fitness components, important for success and performance in many sports.

According to Castagna (2007), the physical requirements of top-level football referees have shown them to run similar distances as professional players. For example, referees in the English premier league ran 9.5km and an International level referee was found to run 11.36km. He concluded that referees covered 47% of the distance at a jogging pace, 23% walking, 12% sprinting and 18% running backwards. In line with the above, Caballero, Ojeda, Garcia-Aranda, Mallo, Werner, Sarmeinto and Valdivielso (2011) stated that referees play a crucial role in modern soccer and the importance of decision during match-play can be critical for the final score of the match. Abass et al (2011) concluded that the Nigerian soccer referees are always seen to have good speed performance when officiating in the National Professional League competition.

Raylor and Donovan (2013) in their opinion, stated that physical fitness involves three separate skills i.e. endurance, speed and agility, all of which are critical for performing at your best. They said that the element of fitness that is critical for effective refereeing is speed. For example, they said when a defender clears the ball from a corner kick to an attacker at midfield and you are at the top of the penalty area you need to have the speed to chase after the counterattack. They suggested that, the best way to develop speed is through interval training which can be based on distance, time or both and generally consist of a ladder of increasing time or distance with increasing times or rest. They concluded that working on your endurance and speed through long runs and interval workouts will help ensure you are fit and prepare you for the demands of the 90 minutes or 120 minutes as the case may be.

Training for referees should therefore be similar to that of players, i.e. endurance runs, speed and strength training and stretching. Professionally, referees should be training at least 3-4 times a week. If we take

into account the fact that many top referees also work professionally and are often 10-15 years older than players (and undergo similar physical stresses as players who take part in matches) one can understand the difficulty of the job (Baumhakel, et.al, 2007). The standard test to estimate running speed is the 50 yard dash developed by American Alliance for Health, Physical Education, Recreation and Dance (1976).

There are many opinions as to what agility is and at present, there is no consensus among sports science community for a clear definition of agility (Sheppard and Young, 2006). Agility has classically been defined as simply the ability to change direction rapidly (Bloomfield, Ackland, & Elliot, 1994). In more recent publications, some authors have defined agility to be whole-body change and direction as well as rapid movement and direction change of limbs (Baechle, 1994; Draper & Lancaster, 1985). Even more confusing has been the introduction of the term "quickness" (Baker, 1999; Moreno, 1995) which is seemingly used interchangeably for both agility and change of direction speed. Quickness has been identified as "a multi—planner or multi-direction skill that combines acceleration, explosiveness, and reactiveness" (Moreno, 1995). This definition suggests that quickness consists of cogitative and physical reactive abilities and explosive acceleration. If this is an identifiable physical quality, then one might infer that quickness is a component of agility as the proposed definition of Moreno (1995) for quickness does not include deceleration or changing direction.

The difficulty in finding an acceptable definition of agility could be the result of the multiple factors, from various disciplines within sports science, which influence agility performance. A bio-mechanist might view agility in terms of the mechanical changes involved in altering body position. A motor learning scientist in sports psychology might view agility in terms of the information processing involved in visual scanning, decisions making and reaction to a stimulus to change directions, as well as the process involved in learning and retaining the appropriate motor skill. Strength and conditioning coach might define agility in terms of the physical qualities involved in changing direction. The differences seen in definitions of agility could be due to the perspective of various authors, and their individual expertise and background. A comprehensive definition of agility would recognize the physical demands (strength and conditioning) cognitive processes (motor learning) and technical skills (biomechanics) involved in agility performance (Sheppard & Young, 2006).

Athletic performances in soccer is a function of aerobic fitness, anaerobic fitness, speed, muscular strength, muscular power, and agility (Bangsbo, Motor, Poulsen, Perez-Gomez, & Krustrup, 2006; Stelen Chaiman, Catagn, & Wisloff, 2005). During a match a player frequently performs activities that require repaid development of force, such as sprinting or quickly changing direction (Bangsbo, 1996). Although high-speed actions only contribute to 11% of the total distance covered in soccer, they actually contribute directly to winning possession of the ball to scoring or conceding of goals (Reilly, Bangsbo & Franks, 2000). Verstegen and Marcellor (2001) stated that agility permits an athlete to react to a stimulus, start quickly and efficiently, move in the correct direction, and be ready to change direction or stop quickly to make a play in a fast, smooth, efficient, and repeatable manner.

As observed by Jones and Rikli (2002) an analysis of agility reveal that it involves an element of co-ordination of specific movements involved in a particular activity; strength necessary to control the inertia of a particular activity; power which is utilized in projecting the body rapidly in any direction and for rapid acceleration where necessary. Also fast reaction time where in a performer must respond quickly to an external stimulus dictated by the ever changing game situation and a normal amount of flexibility to aid full range of motion, smoothness, gracefulness and effectiveness in the execution of a given activity. These contributing factors should, therefore, be developed.

The fast and repeated practice of correct movement patterns involved in a given activity will develop specific co-ordination thus improving agility in referees. However, there are many tests to estimate this component, the popular one being the Illinois agility test developed by AAPHER (1976).

Methodology

The study was a quasi-experimental research design in which profile of football referees in both Cross River and Akwa Ibom States were compared. Their means values in selected motor fitness profiles were compared to determine whether or not, there was any significant difference between the two groups. The population of the study consisted of 54 Grade one (1) referees in the two states comprising twenty eight (28) referees from Cross River and twenty six (26) referees from Akwa Ibom States. These subjects (referees) were certified by their States Training Officer (STO) as having been travelling out for league matches or other competitions of similar importance. Stratified random sampling technique was employed in this study. The stratified sampling was employed considering the heterogeneous nature of the referees in terms of their categories such as Nation Wide League Referees, National League Referees and Premier League Referees. This sampling technique reduces sampling error as it enables the researchers to identify and consider the heterogeneous characteristics of the population while drawing the sample.

In selecting referees from the categories, each category was considered a stratum. Thus, from each stratum, the number of referees was proportionally selected using the simple random sampling technique. The selection

criterion was based on the numbers of referees in each category. The aim was to have 4 referees from the premier league, 8 each from the national and nation-wide leagues totaling twenty (20) referees from the two states i.e. ten (10) referees from each state. From the population of 54 football referees in the two states, a total sample size of 20 subjects (referees) was obtained. This results to 4 premier league referees, 8 each from national and nation-wide leagues referees from the two states. This sample size was used because, Cohen, Manion & Morrison (2011) citing Borg and Gall (1979:194-5) suggested that a casual-comparative and experimental methodologies require a sample size of no fewer than fifteen (15) cases. Related to this study, this assertion provided justification for the use of the specify sample size. The research instrument used in this study was a standardized instrument (Test Batteries). The U.J. Esuene Sports Stadium Calabar was used as testing venue. The U.J. Esuene sports stadium was the venue for the determination of running speed and agility.

Hypothesis 1

Hypothesis one states that there is no significant difference in running speed of referees in Cross River and Akwa Ibom States. This null hypothesis was analyzed using descriptive and inferential statistics. The result of the analysis is presented in table 1 below.

Table 1

Means, standard deviations, ranges and t-value of the running speed fitness profile of Cross River and Akwa Ibom States football referees.

Variable	Groups	No	Means	Standard Deviation	Ranges	t- Value
	CRS	10	7.100	.4546	6.3-7.8	
Speed						.173
	AKS	10	7.070	.3057	6.7-7.6	

Not Significant at .05 level, critical t=2.101: df= 18.

Table 1 contained the means, standard deviations, ranges and t-value of the running speed of football referees in the two states. Cross River referees had a mean speed of 7.100 sec. as against 7.070 sec. recorded for Akwa Ibom referees. For standard deviation, Cross River referees had .4546 while Akwa Ibom referees had .3057. Their speed ranges were 6.3-7.8 sec. for Cross River referees and 6.7-7.6 se. for Akwa Ibom referees. For significance, a t-value of .173 was obtained when tested at.05 level of significance with 18 degree of freedom. The result of the analysis showed that the calculated t-value was less than the critical t-value of 2.101 when tested at .05 level of significant with 18 degree of freedom. This result was not significant indicating that there was no significant difference between the two groups in running speed level. Therefore the null hypothesis was upheld. This finding has answered the research question 1 which seeks to know how referees in Cross River and Akwa Ibom States differ in their running speed level.

Hypothesis 2

Hypothesis two states that there is no significant difference in agility of referees in Cross River and Akwa Ibom states. This null hypothesis was analyzed using descriptive and inferential statistics. The result of the analysis is presented in table 2 below.

Table 2

Means, standard deviations, ranges and independent t-values of the agility fitness characteristics of Cross River and Akwa Ibom States football referees.

Variable	Groups	no	means	Standard Deviation	ranges	t- value
	CRS	10	7.600	.3830	7.0-8.0	
Agility						1.438
	AKS	10	7.370	.3302	7.0-7.8	

Not Significant at .05 level, critical t=2.101: df= 18.

Table 2 contained the means, standard deviations, ranges and t values for agility fitness characteristics for agility, Cross River referees registered a means of 7.600 seconds, a standard deviation of .3830 with a range of 7.0-80 seconds. While Akwa Ibom referees recorded a mean of 7.370 seconds a standard deviation of .3302 with a range of 7.0-7.8 seconds.

In a test for significance, a t-value of 1.438 was obtained. The result of the analysis showed that the calculated t-value was less than the critical t-value of 2.101 when tested at .05 level of significant with 18 degree of freedom. This result was not significant indicating that there was no significant difference between the two groups in agility level. Therefore the null hypothesis was upheld. This finding has answered the research question two which seeks to know how referees in Cross River and Akwa Ibom States differ in their agility level.

Discussions of findings

This section was concerned with the discussion of findings arising from the results of the statistical analysis of the two hypotheses directing the study. The presentation was done hypothesis by hypothesis.

Fifty yards dash was used to test running speed of subjects. The means of 7.100 seconds and 7.070 seconds were recorded for Cross River and Akwa Ibom referees respectively. Referees in the two states were very homogeneous in their running speed. The ranges of 6.3-7.8 seconds and 6.7-7.6 seconds observed for Cross River and Akwa Ibom referees respectively were very narrow. Similarly the standard deviations of .4546 seconds and .3057 seconds recorded for referees in Cross River and Akwa Ibom States respectively, were enough grounds for this conclusion.

Considering the need for a good sprinting ability for all referees, one could see why their standard deviation values were so negligible. Running speed is therefore a factor for successful performance in a game of soccer. Abass et.al (2011) however reported a mean of 5.33 $\pm$ 0.255 seconds for Nigerian FIFA referees. Though Abass et.al (2011) tested this variable but he used a 40 meter dash which was lower than the 50 yards dash that was used in this study. Therefore, his mean score of 5.33 $\pm$ 0.255 seconds could not be used for comparison.

So far it has not been established as to what extent speed should be developed. It is however obvious that what is needed for these two groups is optimal running speed as referees are seen running relative to either the ball or to observe the distance of 9.15m (10 yards). This was in line with Asagba (2004) who stated that, a soccer referee is supposed to be within 10 to 15m range from the ball at all times during play.

Agility was determined with Illinois agility test. Cross River referees had a mean score of 7.600 seconds as against 7.370 seconds recorded for Akwa Ibom referees. When compared for significance, there was none between the two groups. Referees in the two states also appeared to be homogenous as their standard deviations values were very low. Their range too was not too wide. Cross River referees had a range of 7.0-8.0 seconds with a standard deviation of .3830 seconds while Akwa Ibom referees had a range of 7.0-7.8 seconds and a standard deviation of .3302 seconds. The ability to suddenly react, with the ever changing directions usually observed in referees, cannot be over emphasized. Referees movements on the field are controlled by the players and the movements of the ball. Since these external controlling factors can change without much signal, the better referees is one who can predict which changes fast and react accordingly, thus making agility a factor for successful performance in the game of football.

Previous studies consulted on referees; do not suggest any physical fitness norm for referees against which a comparison could be have been made. However, an average agility fitness level is required by a referee for effective performance.

Conclusions and Recommendations

The result of the statistical analysis revealed that:

1. There is no significant difference in running speed level of referees in Cross River and Akwa Ibom States.

2. There is no significant difference in agility level of referees in Cross River and Akwa Ibom states.

   Based on the conclusions of the study, it was recommended that:

   Though no significant difference were observed in the variables tested between the two groups, and it was noticed that, the two groups were near perfect when compared with their counterparts, speed, agility and strength training should be included in the referees' training programme to enable them gain strength and stamina to cope with the game.

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