Comparative study on selected physical fitness variables between basketball and football referees

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Abstract
A referee is an official, in a variety of sports and competition, responsible for enforcing the rules of the sport, including sportsmanship decisions such as ejection. The official tasked with this job may be known by a variety of other titles depending on the sport, including umpire, Technical Official (by the International Olympic Committee). Referees may be assisted by umpires, linesmen, timekeepers, or touch judges. To achieve the purpose of the study 40 active referees from Coimbatore district. Their age ranged from 20 to 25 years. The subjects were randomly assigned to two equal groups. Group – I (n=20) underwent basketball referees and Group – II (n=20 football referees. The following tests were performed to measure the physical fitness parameters: 110mt test was used to measure the speed endurance, 50 meters run test was used to measure the speed. The data collected from the subjects were statistically analyzed using ‘t’ test to find out whether significant mean difference existed at 0.05 level of confidence. The result of the study was significant difference in the speed and speed endurance between the football and basketball referees. The speed level is better to the basketball referees compare with the football referees. The speed endurance level is better to the football referees compare with the basketball referees.

Keywords: Speed endurance, speed, football referees, Basketball referees

Introduction
A referee is an official, in a variety of sports and competition, responsible for enforcing the rules of the sport, including sportsmanship decisions such as ejection. The official tasked with this job may be known by a variety of other titles depending on the sport, including umpire, Technical Official (by the International Olympic Committee). Referees may be assisted by umpires, linesmen, timekeepers, or touch judges. Football is a popular sport in India. Football has enjoyed popularity in Kerala, West Bengal, Goa and northeastern India which consists of Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, Arunachal Pradesh and Sikkim. India current top domestic league, I-League, was formed in 2007 in an attempt to professionalize domestic football. In 2013 the Indian Super League was formed as an unrecognised professional league with 8 teams to promote Indian football to the country and world. After three seasons, the Indian Super League was recognised as a top tier league, running in parallel with the I-League, thus leaving India as one of the few countries with two fully recognised top tier leagues. Also contested is Santosh Trophy, a knock-out competition between states (provinces) and government institutions. The current captain of the Indian national team is Sunil Chhetri. India is currently ranked 103 among the FIFA World Rankings.

In American high school and college basketball, officials wear black-and-white-striped shirts with black side panels, black pants, and black shoes. Some state high school associations allow officials to wear grey shirts with black pin-stripes instead of black-and-white-striped shirts. NBA officials wear light grey shirts with black slacks and black shoes. The NBA shirt is light grey with thin white stripes, black sleeves, a black stripe on either side, a red and blue collar, the official’s number in the center at the top on the back, and the NBA logo above the left breast and the Nike Swoosh on the right. NBA Summer League officials wear the same light grey shirt but with a black collar. The WNBA referee shirt is almost identical to the NBA referee shirt except that its collar is orange and the WNBA logo takes the place of the NBA logo.
FIBA officials wear a grey (torso) and black (sleeves) shirt, black trousers, black socks, and black shoes. Officials in competitions organized by Euro league Basketball – the Euro League and Euro Cup – wear an orange shirt. Officials in the Israel Basketball Association wear the Euro League's orange shirt but sometimes wear royal blue shirts for contests between two Israeli teams. NBL officials wear green shirts with black shoulders and stripes on the sides with black pants. The NBL logo is atop the breast and a sponsor's name is on the back. Shirts are V-neck, without a collar, and pants lack belts. All officials wear a whistle that is used to stop play as a result of a foul or a violation on the court. Hand signals are used to indicate the nature of the infraction or to administer the game. (Koeipakvaen, 2017).

**Football referee**

The term “referee” originated in association football. Originally the team captains would consult with each other in order to resolve any dispute on the pitch. A referee or simply ref is the person of authority in a variety of sports who is responsible for presiding over the game from a neutral point of view and making on-the-fly decisions that enforce the rules of the sport, including sportsmanship decisions such as ejection. The official tasked with this job may be known, in addition to referee, by a variety of other titles as well (often depending on the sport). The referee did not take his place on the pitch until 1891, when the umpires became linesmen (now assistant referees). American football officials are commonly referred to referees, but each has a title based on their position. They consist of: Referee, Head Linesman, Line Judge, Umpire, Back Judge, Side Judge, and Field Judge. A referee or simply ref is the person of authority in a variety of sports who is responsible for presiding over the game from a neutral point of view and making on-the-fly decisions that enforce the rules of the sport, including sportsmanship decisions such as ejection. They say that the men and women in black are having a good game if you don't notice them. It's the one with the whistle - the referee - who takes charge of a match, with the help of two assistant referees. In professional matches, a fourth official is also involved.

**Basketball referee**

In basketball, an official (usually called a referee) enforces the rules and maintains order in the game. The title of official also applies to the scorers and timekeepers, as well as other personnel that have an active task in maintaining the game. Basketball is regarded as among the most difficult sports to officiate due to the speed of play, complexity of rules, the case-specific interpretations of rules, and the instantaneous decision required. There is one lead referee and one or two umpires, depending on whether there is a two- or three-person crew. In the NBA, the lead official is called the crew chief with one referee and one umpire. In FIBA-sanctioned play, two-man crews consist of a referee and an umpire, and three-man crews contain a referee and two umpires. Regardless, both classes of officials have equal rights to control almost all aspects of the game. In most cases, the lead official (in FIBA, the referee) performs the jump ball to begin the contest, though NFHS and NCAA have allowed the referee to designate which official (referee or umpire) shall perform the jump ball. There are two standard methods for officiating a basketball game, either "two-person" or "three-person" mechanics depending on how many officials are available to work the game. In "two-person" mechanics, each official works either the lead or the trail position. The lead position is normally along the baseline of the court, with the trail position having its starting point at the free throw line extended on the left side of the court facing the basket. Officials change position often during the game to cover the area in the best possible way. As the game transitions from one end of the court to the other, the lead becomes the trail and vice versa. Between the two positions, each is responsible for a specific part of the court as well as two each of the side, base or back court lines. Officials change position after certain calls (mostly when the lead official calls a defensive foul). This allows officials to alternate between positions to increase the speed of play; one official will approach the bench whilst another, usually the closest to the bench at that time, will move to occupy his position. This also prevents one official from always working one particular team's basket throughout the course of the game.

**Methodology**

To achieve the purpose of the study twenty (20) basketball referees and twenty (20) football referees were selected from Coimbatore District association. The age of the subjects ranged between 20 and 25 years. The following tests was performed to measure the physical fitness parameters:-To measure speed 50m dash, to measure speed endurance 110m test.

**Statistical techniques**

The data was collected and statically examined to compare the physical fitness components variables of football referees and players. The ‘t’ ratio was calculated to find out the significance difference if any in all the cases to test significance of 0.05 level of confidence was used.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>‘t’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed</td>
<td>Football Referees</td>
<td>7.74</td>
<td>0.49</td>
<td>0.11</td>
<td>3.14*</td>
</tr>
<tr>
<td></td>
<td>Basketball Referees</td>
<td>7.33</td>
<td>0.31</td>
<td>0.06</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level 2.093(1, 19)

The table-1 reveals that the computation of ‘t’ ratio on speed between football and basketball referees. The mean values of football and basketball referees were 7.74 sec and 7.33 sec respectively. The observed t value of speed 3.14 was greater than the table value of 2.093 for the degrees of freedom 1 and 19 at 0.05 level of confidence. Since, it was found to be statistically significant.

From the result it is speculated that there is significant difference over speed between Football and Basketball referees. The mean values on football and basketball referees are graphically represented in figure-1.
Table 2: Computation of ‘t’ ratio on Speed Endurance between Football and Basketball Referees

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
<th>‘t’*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Endurance</td>
<td>Football Referees</td>
<td>13.60</td>
<td>0.75</td>
<td>0.16</td>
<td>3.42*</td>
</tr>
<tr>
<td></td>
<td>Basketball Referees</td>
<td>14.66</td>
<td>1.16</td>
<td>0.26</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level 2.093(1, 19)

The table-2 reveals the computation of t ratio on speed endurance between football and basketball referees. The mean values of football and basketball referees were 13.60sec and 14.66sec respectively. The observed t value of speed endurance 3.42 was greater than the table value of 2.093 for the degrees of freedom 1 and 19 at 0.05 level of confidence. Since, it was found to be statistically significant.

From the result it is speculated that there is significant difference over speed endurance between Football and Basketball referees. The mean values on football and basketball referees are graphically represented in figure-2.

**Discussion on findings**

The Football referees naturally need to have more speed endurance compared to the Basketball referees. Since, during the course of match the action playing football with referees must be present at all the place and at right time are the see the game up close throughout the field for entire 90 minutes of duration of the match. Whereas the Basketball referees run far and with ball and for poisoning the ball and players, this requires more speed than Football referees. The observation from the present study also established the concept after analyzing statistically.

The results of the study indicated that there was a significant difference over selected physical fitness components speed, and speed endurance difference between football referees and basketball referees. The findings of the present study had similarity with the findings of the investigations referred in this study.


The result of the present study indicates that football referees shows better performance on speed endurance when compare to basketball referees and basketball referees shows better performance on speed when compare to football referees.

**Conclusion**

From the results of this study, the following conclusions were drawn

1. It was concluded that there was a significant mean difference in speed between football and basketball referees.
2. It was concluded that there was significant mean difference in speed endurance between football and basketball referees.
3. Further it was concluded that the basketball referees possess speed better than football referees.
4. Further it was concluded that the football referees possess speed endurance better than basketball referees.

**References**