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Aerobic endurance test performance among football players in different age and play-positions during COVID-19

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Abstract

Endurance is an ability to withstand against fatigue in sport specific conditions or perform for long period of time. Sport specific endurance in football players is crucial to meet the demand of the sport. Endurance performance represents a very important fitness component to maintain a high level of intensity throughout the game and also in selection and profiling of football players. Covid-19 is highly transmitted viral infection affecting respiratory tract and lungs. Covid-19 restrictions has affected the training pattern of the players. This study is to assess aerobic endurance of football players based on their age and play positions. Total of 67 convenient samples were assessed using the endurance field test (YO-YO Intermittent Recovery test). The results obtained shows that there is significant difference in endurance score within the age group of 16-25 years, with p value of 0.009. Also, there is significant difference in play-positions with p value of 0.000. Hence it is concluded that there is significant difference in aerobic endurance among football players in different age and play-positions.

Keywords: Endurance, play positions, football players, covid-19

1. Introduction

Football is an intermittent, high-intensity physical activity with submaximal effort over a prolonged period of time that requires well developed aerobic endurance. Covid-19 is a viral infection highly transmissible to others which lead to pandemic due to which social distancing had become mandatory to prevent the spread.

Scientific evidences has shown emphasis of aerobic endurance in competitive development of football players and well developed fitness statuses to meet the various demands of the match. It is essential that fitness testing sessions are administered during training phases to assess and monitor the players, especially during this altered training due to covid-19 outbreak and its restrictions.

Football specific field tests have been developed for assessment of aerobic endurance. Field tests are considered as less time consuming, easily available and sustainable alternative of laboratory tests. Recently, a number of field tests have been proposed for assessment of aerobic fitness in football players. Yo-Yo intermittent recovery test level-1 (Yo-Yo IR1) proposed by Bangsbo is often advised amongst the other beep tests as it elicits maximal aerobic responses while significantly stressing the anaerobic energy system and has strong correlation with match activity.

Different age and play positions (Forwards, defenders, midfielders, goal keepers) in football exhibit differences in aerobic endurance. Since, playing position depicted variation in performance load and intensity of movements during matches.

Therefore, the aim of the study was to investigate the differences in different age and play positions amidst the covid-19 pandemic.

2. Materials and Methods

2.1 Materials

- Pen/Pencil

- Yo-Yo test recording sheet
- Measuring tape
- Marker cones
- Audio device

2.2 Methodology

Across-sectional field based study was used to carry out the study. 67 football players from different football clubs in Bangalore were recruited as samples with their consent through convenient purposive sampling method.

2.3 Procedure

YO-YO Intermittent recovery level-1 test is focused on assessment of running distance and aerobic endurance of football players. The test consists of repeated lengths of 2×20m, with players running back and forth in response to audio signals. Each player was tested in his own area, which was 20m long with 5m of active recovery. This area was marked by cones. After completing 2×20m players had 10s of active recovery which consisted of 2×5m jogging or walking. If the player failed to reach the line twice in the given time interval, the test was stopped and total distance is recorded. We used the total running distance for test performance assessment.

3. Results and Discussion

This study describes aerobic endurance test performance of professional male football players in different age and play-positions amidst covid-19.

As stated in introduction, the endurance performance represents a very important fitness component in both prediction of match performance and also profiling of football players. However, previous studies on endurance performance measured in laboratory settings does not discriminate well and use of field based tests is a more valid approach. Our main findings indicate that the Yo-YoIR1 test distinguishes the differences in age and among playing positions in football players during covid-19 pandemic.

Table 1: Mean and SD of Endurance Score

	N	Minimum	Maximum	Mean	Std. Deviation
Endurance score	67	14.50	19.80	16.9552	1.40154

Average endurance score is 16.9552±1.40154

Table 2: Frequency distribution of age

Age in years	Frequency	Percent
16.00	6	9.0
17.00	4	6.0
18.00	12	17.9
19.00	10	14.9
20.00	7	10.4
21.00	10	14.9
22.00	4	6.0
23.00	2	3.0
24.00	6	9.0
25.00	6	9.0
Total	67	100.0

Average age of the study group is 20.119±2.694 years

Table 3: Correlation between Age and endurance

Age and endurance	
Pearson Correlation	.315**
P value	.009
N	67

There exists significant positive correlation, as age increases endurance score also increases

Table 4: Frequency Distribution of Play Position

Play position	Frequency	Percent
defender	19	28.4
forward	20	29.9
midfield	20	29.9
goal keeper	8	11.9
Total	67	100.0

Table 5: Position Wise Endurance Score

	N	Mean	Std. Deviation
Defender	19	16.0421	1.12907
Forward	20	17.2850	1.42654
Midfielder	20	17.8600	1.17536
Goal-keeper	8	16.0375	.30677
Total	67	16.9552	1.40154

Anova: F value=9.797, p value=0.000 $p < 0.05$. Therefore, there is significant statistical difference in endurance based on play position on assessing with YO-YO Intermittent recovery level-1 test.



Graph 1: Position Wise Endurance Score

Table 6: Comparison between positions (Bonferroni test)

(I) play_position	(J) play_position	Mean of (I) play_position	Mean of (J) play_position	Sig.
Defender	Forward	16.0421	17.2850	.010
Defender	Midfield	16.0421	17.8600	.000
Defender	goal keeper	16.0421	16.0375	1.000
Forward	Midfield	17.2850	17.8600	.780
Forward	goal keeper	17.2850	16.0375	.087
midfield	goal keeper	17.8600	16.0375	.003

Current results shows that there was statistically significant difference between (a)defender and forward with p value (0.010) average endurance was high in forward, (b)defender and midfield p value (0.000) average endurance was high in midfield and (c)midfield and goal keeper p value (0.003) average endurance was high in mid field. In all these cases $p < 0.05$

There was no statistically significant difference between defender and goal keeper p value (1.000),forward and mid fielder p value (0.780), and between forward and goal keeper p value (0.087) because in all these cases $p > 0.05$. Therefore we can conclude their endurance level is almost same.

The average endurance score of the football players was 16.9552±1.40154

Regarding the players age, we observed significant statistical differences and increase in Yo-YoIR1 test performance with increase in age as the p value was 0.009

Regarding the players play-position, we observed significant differences in the Yo-YoIR1 test performance. Specifically,

the highest Yo-YoIR1 test performance scores were observed in mid-fielder, those usually cover the highest distance with high intensity running during a football match.

4. Conclusion

The study concluded that there is difference in aerobic endurance of football players among different age and play-positions during covid-19. As age increased aerobic endurance of the football players increased.

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