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Comparison of Physiological variables among qualifying and non-qualifying women's cricket teams

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Abstract

Cricket is most popular team sport in India. To be in Indian team one must perform the best. For best performance one must have idea about the factors which will give a positive contribution in performance. The purpose of this study was to compare the physiological variables of qualified and not qualified teams of U-19 girl's cricket divisional tournament of M.P. Through purposive sampling method players of qualified teams (Indore and Bhopal) of pool B and not qualified team of same pool (Rewa and Ujjain) were selected. The selected dependent variables for the study were forced vital capacity, right hand grip strength, left hand grip strength, heart rate and oxygen saturation level. The 30 girls of qualified team and 30 girls of not qualified were taken as independent variable. Statistical analysis was done with SPSS 20.0, USA. Mean and standard deviation was calculated as a descriptive statistics and independent t-test was used to find out the difference in each selected physiological variable at 0.05 level of significance. The statistical analysis showed that there is significant difference between forced vital capacity of qualified and not qualified teams, which may be because of better lung capacity of high level players, also it is found that there is no any significant difference between left hand grip, right hand grip and SPO₂ of qualified and not qualified teams. It is concluded from the data that for achieving high performance in cricket along with the skill, physical fitness (Lung capacity) is equally importance.

Keywords: physiological variables, through purposive, lung capacity

Introduction

Cricket is most popular team sport in India. Every single person in a family is involved in this sport. Current status of team India is also very good which makes this more interesting area. To stay in the team and to represent India a player must be the master of skill along with fitness. It will be not enough as a player to perform in any one specific area. He has to perform well in fielding, catching, accurate throwing, chasing the ball and with his specific area.

Hence to perform better we must be known about the factors which will give a positive contribution in performance. The researcher had gone through some physiological variables of the players. He compared the variables in between qualified and not qualified teams of U-19 divisional tournament of girls of Madhya Pradesh.

The variables selected by researcher were forced vital capacity, right hand grip strength, left hand grip strength, heart rate and oxygen saturation level.

Forced vital capacity includes the total amount of air blown out forcefully after deep inhalation. It will show the lung capacity of a player. A medium pacer baller than he have to perform 6 sprints in 4minutes. Similarly for chasing a fast rushing ball a fielder run behind the ball with 100% intensity. The batsmen also require quite high speed for running in between wickets. All these activities require quite good lung capacity.

Hand grip strength: we can measure the static hand grip strength of the players by using hand grip dynamometer. A batsman need lots of forearm strength for performing efficient batting. Similarly bowlers also need strength in their fingers and grip so as to grab the ball nicely. The researcher has taken the data of both hands.

Oxygen saturation (SPO₂) is the ratio of oxygen saturated haemoglobin to the total haemoglobin present in the body. Normally this values ranges from 95 to 100. Through this value the oxygen binding capacity with haemoglobin will be known.

Since while performing activities on the ground cricketers need proper supply of oxygen to all the parts, hence this can help in enhancing the performance of the player.

Heart rate: It is the no of times the heart beats in one minute. Cricket is the game in which player stays on the ground for longest duration. Over the period of whole game the heart rate goes very up and down, which requires a strong heart with good stroke volume. Through this study we would be able to know the states of heart rate of the U-19 payers after the match.

Methodology

Selection of subject

For the purpose of study players of qualified teams (Indore and Bhopal) of pool B and not qualified team of same pool (Rewa and Ujjain) were selected.

Selected Variable

Independent variables: girls of U-19 divisional cricket team i.e. Indore, Bhopal, Ujjain, and Rewa.

Dependent variables: forced vital capacity, left hand grip strength, right hand grip strength, oxygen saturation, heart rate.

Criterion Measure

The criterion measure chosen for the study were hand grip strength test from dynamometer, forced vital capacity test by spirometer, oxygen saturation and hear rate by pulse oximeter.

Administration of test

Hand grip strength test: The subjects were instructed to stand straight with fully extent elbow by taking dynamometer in hand. Further they were instructed to press dynamometer as

forcefully as possible without bending knee and elbow. The test will be repeated 2 times from one hand then same procedure will be repeated from another hand.

Spirometer test: The subjects were instructed to stand and after deep inhalation they were allowed to blow forcefully inside the spirometer funnel. The same procedure was repeated twice and maximum figure is taken as final reading.

Pulse oximeter: The subjects were instructed to sit comfortable and instrument is fixed over his index figure, after just few seconds final reading were displayed over the screen.

At the end of the administration of the test, the proper explanation of the nature and the objective of the study was given to the cricketers who had curiosity to know for their acknowledgement and invited to ask questions if they wished.

Statistical techniques

Statistical analysis was done with SPSS (Statistical Package for the social Science, 20.0, USA). Mean and standard deviation was calculated as a descriptive statistics and independent t-test was used to find out the difference in each selected physiological variable at 0.05 level of significance. The statistical analysis(table1 and table 2) showed that there is significant difference between forced vital capacity of qualified and not qualified teams, which may be because of better lung capacity of high level players, also it is found that there is no any significant difference between left hand grip, right hand grip and SPO2 of qualified and not qualified teams. The insignificant difference is seen in some variables may be because cricketers prefer to spend lot time in batting and balling which improves their hand grip strength but they take fitness as the secondary option.

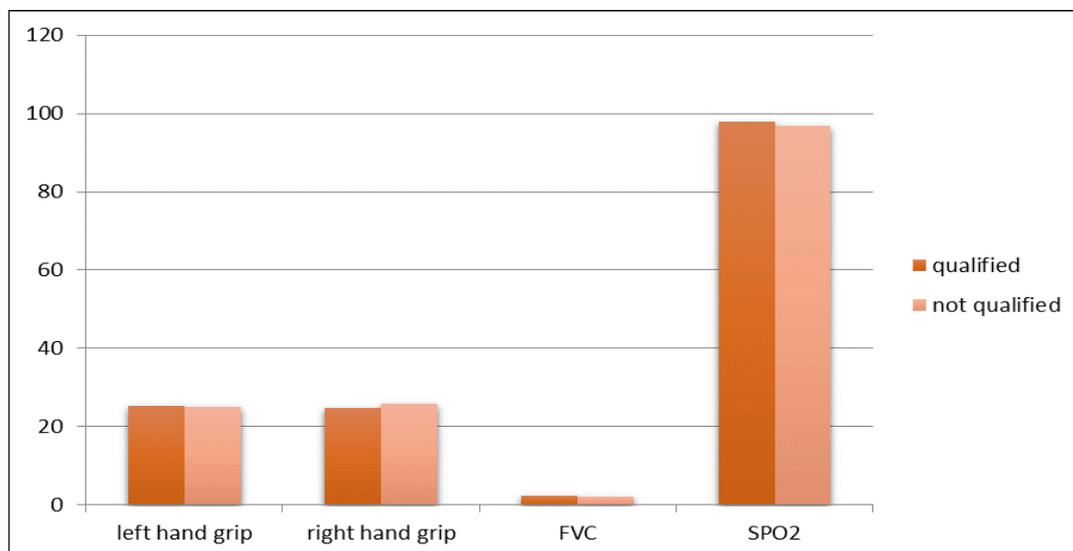


Fig 1: Graphical presentation of means of physiological variables of qualified and not qualified teams.

Table 1: Group Statistics

Physiological Variables	TEAMS	N	Mean	Std. Deviation	Std. Error Mean
LH GRIP	QUALIFIED	30	25.3567	3.86770	.70614
	NOT_QUALIFIED	30	25.0967	4.65414	.84973
RH GRIP	QUALIFIED	30	24.9033	3.79587	.69303
	NOT_QUALIFIED	30	25.7633	3.68889	.67350
FVC	QUALIFIED	30	2.4600	.56848	.10379
	NOT_QUALIFIED	30	2.0067	.52452	.09576
SPO2	QUALIFIED	30	97.7667	1.07265	.19584
	NOT_QUALIFIED	30	96.9000	2.39756	.43773

Table 2: Independent Samples Test

Physiological Variables	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
LH GRIP	.235	58	.815@	.26000	1.10484	-1.95158	2.47158
RH GRIP	-.890	57.953	.377@	-.86000	.96638	-2.79445	1.07445
FVC	3.210	58	.002*	.45333	.14122	.17065	.73602
SPO2	1.807	58	.076@	.86667	.47954	-.09324	1.82658

*Significant at 0.05 level

@ not significant at 0.05 level

Conclusion

It is concluded from the data that that for achieving high performance in cricket along with the skill, physical fitness (lung capacity) is equally importance. Especially they should work on their lung capacity for achieving their peak performance.

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