

COMPARATIVE STUDY OF SELECTED PHYSICAL AND PHYSIOLOGICAL VARIABLES OF MALE TARGET BALL PLAYERS AT DIFFERENT LEVELS OF COMPETITION

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Abstract

The goal of this study was to examine the physical and physiological characteristics of male district and State Level Target Ball players. As a topic, Sixty (60) target ball players were chosen at random from inter district and interstate in Uttar Pradesh as a subject. The individuals were range in age from 18 to 25 years old. It was expected that male Target ball players in different states would have substantial differences in physical fitness and physiological characteristics. The 50m dash (sec), 2.4km run (min.) and standing jump were used to qualify the physical variables of speed, endurance, and power. Resting heart rate and vital capacity, as determined by Stop watch and dry spirometer, were the physiological variables. Independent "t" tests were used to assess the data collected on different levels of basketball players. The confidence threshold for evaluating the hypothesis was set at 0.05. In terms of speed, power, and endurance RHR and vital capacity. It was discovered that interstate players outperformed inter district ones.

Key Words: *speed, endurance, power, vital capacity, Resting Heart Rate and spirometer.*

INTRODUCTION

In today's synerio everybody wants quick progress in every aspect of life including the field of physical activity and sports also. Nowadays the sports performance may be more influenced by Scientific techniques, through these techniques we can better understand of anatomy and physiology of an individual. Mostly sports performance is required factors such as physical fitness, use of scientific techniques and equipment along with physique, muscular composition and physiological aspects[1]. These factors also have an impact the fitness, strength and capabilities of sports person. Among these factors the most important factors are physical fitness because efficiency of techniques is also dependent on physical fitness. So, it is fact that while we select the sports person of any game the most emphasise should be on physical fitness of an individual. It has been really observed by the experts in the performance of target ball players does not directly dependent on the proficiency of skills but it also dependent on their physical and physiological strength and capabilities of an athletes.

Physical fitness is the capacity of an individual to do daily routine work without feeling compulsion and stress because it is related to physiological capacity of an individual such as body composition, cardio-respiratory fitness, flexibility, muscle strength and muscular endurance [2].

For giving high performance in target ball, the player does not only require the following qualities such as speed, endurance, power, agility, flexibility but also, they should have good physical structure along with the knowledge of using scientific techniques. It is well understood that every player has different level of physical and physiological fitness at different level of competitions. As a result, the purpose of this study is to determine the differences in physical and physiological fitness of target ball players at various levels of competition.

Speed: Speed is the capacity to perform any movement in the less time, such as a throw, sprint, or jump.

Endurance: Endurance is the capacity to do work for long duration under the condition of fatigue.

Power: Power is an important factor for any sports because it produces energy in body to do the work, especially in heavy resistance sports such as: weightlifting, power lifting and wrestling.

Agility: Agility is one of the most important components of fitness because it requires in mostly sports such as Football, basketball, handball and Target ball [3].

METHODOLOGY

Sixty male Target ball players (30 inter district and 30 interstate) were randomly selected from Uttar Pradesh as a subject. The age of the subjects was ranged from 18-25 years.

A. Selection of Variables:

PHYSICAL FITNESS VARRIABLE

S.NO	VARRIABLES	TEST
1	Speed	50m dash (sec)
2	Endurance	12-minute run and walk (cooper)
3	Power	Standing jump

PHYSIOLOGICAL VARIABLE

S.NO	VARRIABLES	TEST
1	Resting Pulse Rate	Stop watch
2	Vital capacity	Dry Spirometer (liters)

III. HYPOTHESES

1. It was hypothesized that there could be differences in physical fitness factors among Target ball players competing at various levels.
2. It was hypothesized that physiological characteristics among Target ball players of various levels at contests would differ significantly.

IV. COLLECTION OF DATA

1: Speed (50 Yard Dash)

Objective: Through this test the speed was measured of subjects in running.

Equipment: Clappers and stopwatches.

Description: This test was done in 200m track. For conducting test, 50m dash distance was marked along with starting and finishing line. After doing warm up the subjects stood behind the starting line and took their position. By the command of clapper, the subject was started to run with its pair and reached to the finishing line with minimum time.

Scoring: The time was recorded to the nearest 1/100 of a second.

2: Endurance:(12-minute run and walk: cooper)

Objective: To measure the Muscular strength of the subject.

Equipment: 400m track and Stop watch.

Description: All the subjects were distributed in four groups. After that they stood on starting point according to their turn. With the command of clapper, the subjects were started to walk or run and tried to covered the maximum distance in less time.

Scoring: The distance was recorded in miles or kilometre within 12 minutes [4].

3: Power (Standing Jump)

Objective: To measure the strength of the leg.

Equipment: Whistle, lime powder and Measuring tape.

Description: The subjects were assembled in group and ready for test. In this jump, the subject stood behind the starting point with their feet apart and squat down for jump forward and tried to cover the maximum distance. The subject, swinging the arms forcefully and jump forward. The specified movements in executing the jump are extremely important. Each subject was given three chances. The subjects were asked to stand close to the starting point and asked for jump to the longest distance. As he jumped and touched the ground, the foot marked left, a mark on the ground was recorded.

Scoring: The difference between the initial jump and final jump was calculated and this was considered the score of standing jumps.

PHYSIOLOGICAL VARIABLE

1. Resting Pulse Rate

The pulse rate was counted by palpating at the wrist (radial artery) for one minute. The score was expressed in terms of number of pulse beats per minute. The test was conducted in the morning when the subjects were at rest.

Scoring: Total number of pulse beats per minute for each subject was recorded as the score.

2: Vital Capacity

Equipment: Dry spirometer Procedure:

Vital capacity was measured in litters by using dry spirometer. The spirometer was brought in zero position. The subject performs maximum inspiration and after closing the nose the air was breathed out as intensely as possible into the mouthpiece. The amount of air expired was read directly from the calibrated scale. Best of the three trials were recorded in litter per minute. The Mouthpiece was sterilized with rectified spirit after every three trials. Scoring: The reading shown by the calibrated scale is seen and the vital capacity is recorded in litters.

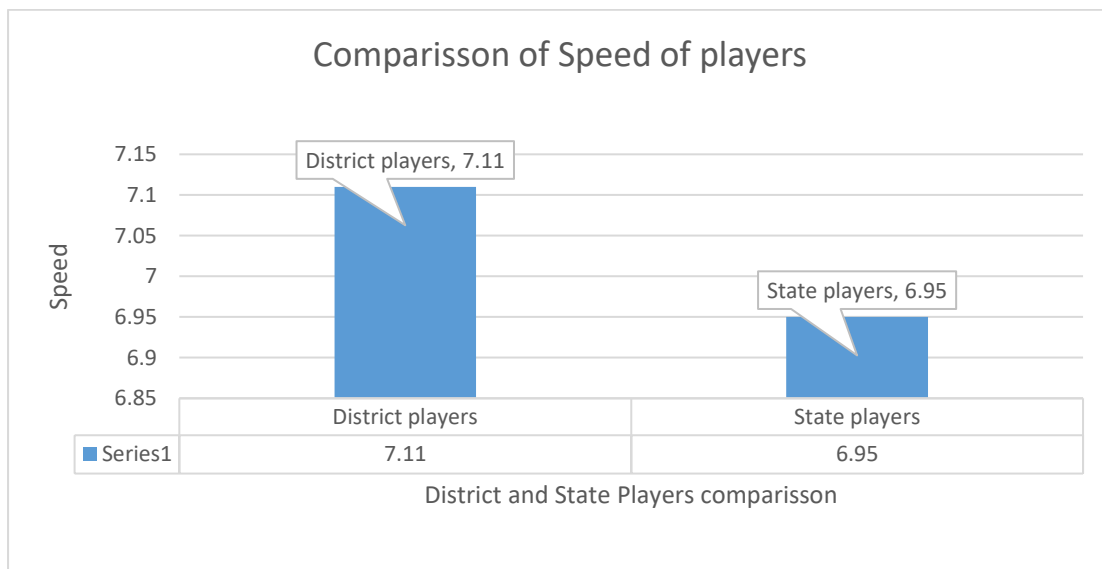
V. STATISTICAL PROCEDURE

To determine the differences in selected physical and physiological variables of basketball players at different level of participation (viz. Inter district & Interstate), an Independent 't' test was used. The level of Significance was set at 0.05 levels ($p < 0.05$)

Variables	Mean & sd of Inter District Players (N=30)	SD	Mean & Sd of Inter State players (N=30)	SD
Age	22.89	1.75	22.88	1.18
Weight	73.92	4.60	73.6	4.77

TABLE I SIGNIFICANCE OF DIFFERENCE OF MEANS IN PHYSICAL FITNESS VARIABLE AT DIFFERENT LEVEL OF COMPETITION

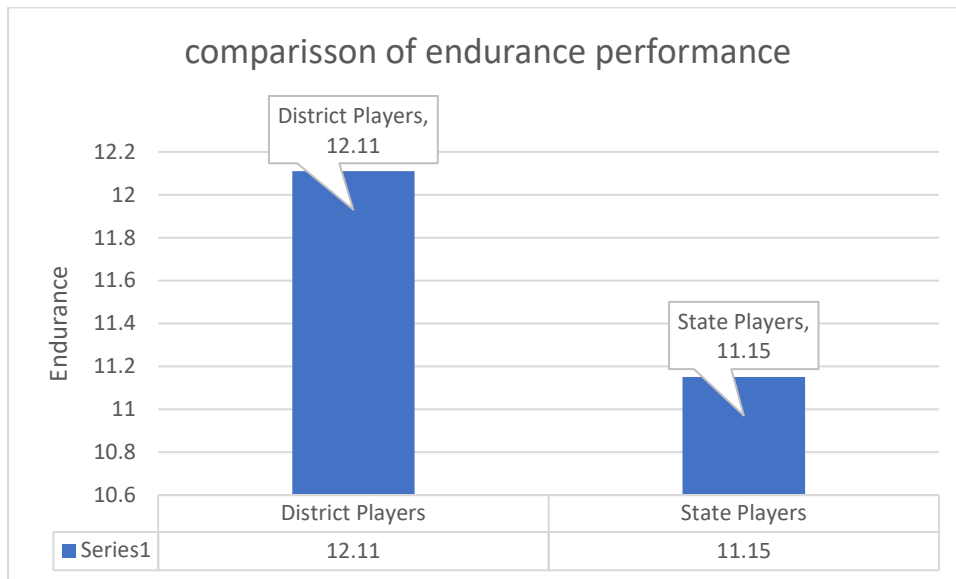
Variables	Mean of Inter District	SD	Mean of Inter State	SD	t' ratio
Speed	7.11	0.8	6.95	1.1	1.78



From table 1, the following conclusions can be drawn: it has been observed from the table that mean difference between District and State level Players was found. The State level Players had exhibited significantly better on Speed than their counterpart District level Players [5,6].

TABLE II SIGNIFICANCE OF DIFFERENCE OF MEANS IN PHYSICAL FITNESS VARIABLE AT DIFFERENT LEVEL OF COMPETITION

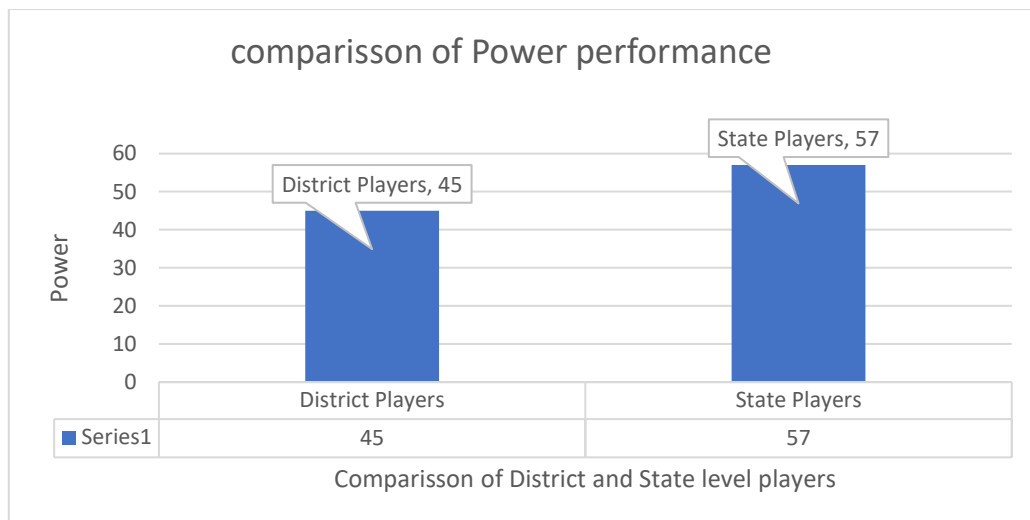
Variables	Mean of Inter District	SD	Mean of Inter State	SD	t' ratio
Endurance	12.11	1.5	11.15	1.1	1.78



From table 2, the following conclusions can be drawn: It has been observed from the table that mean difference between District and State level Players was found. The State level Players had exhibited significantly better on endurance than their counterpart District level Players.

TABLE III .SIGNIFICANCE OF DIFFERENCE OF MEANS IN PHYSICAL FITNESS VARIABLE AT DIFFERENT LEVEL OF COMPETITION

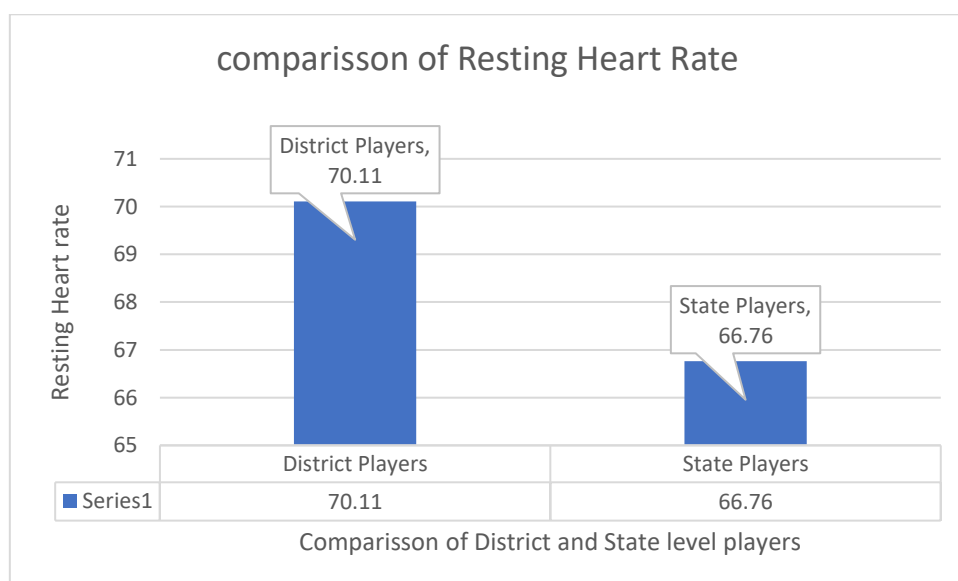
Variables	Mean of Inter District	SD	Mean of Inter State	SD	t' ratio
Power	45	3.5	57	4.6	8.78



From table 3, the following conclusions can be drawn: It has been observed from the table that mean difference between District and State level Players was found. The State level Players had exhibited significantly better on Power than their counterpart District level Players.

TABLE IV SIGNIFICANCE OF DIFFERENCE OF MEANS IN PHYSIOLOGICAL VARIABLE AT DIFFERENT LEVEL OF COMPETITION

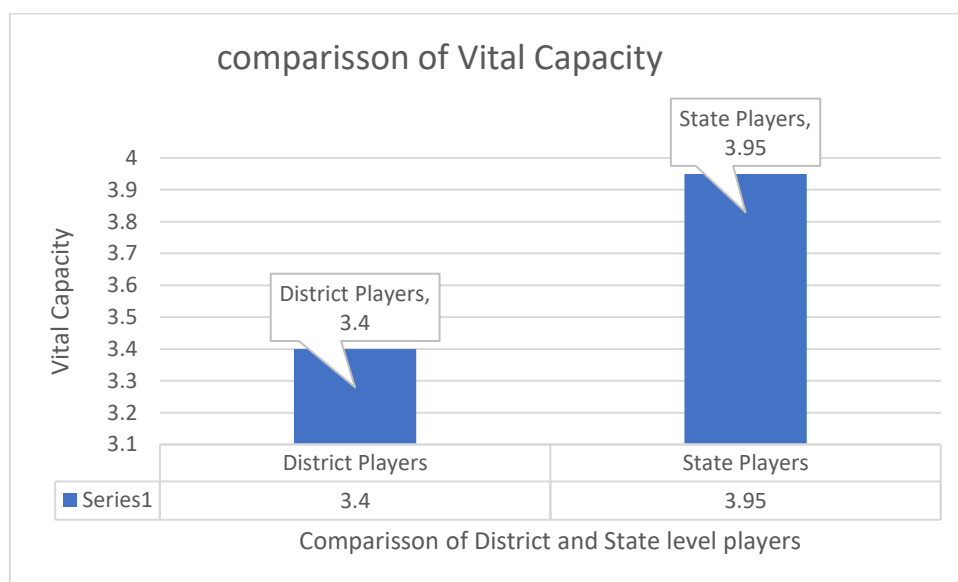
Variables	Mean of Inter District	SD	Mean of Inter State	SD	t' ratio
Resting Heart Rate	70.11	2.1	66.76	1.9	2.78



From table 4, the following conclusions can be drawn: It has been observed from the table that mean difference between District and State level Players was found. The State level Players had exhibited significantly better on Resting Heart rate than their counterpart District level Players [7].

TABLE V SIGNIFICANCE OF DIFFERENCE OF MEANS IN PHYSIOLOGICAL VARIABLE AT DIFFERENT LEVEL OF COMPETITION

Variables	Mean of Inter District	SD	Mean of Inter State	SD	t' ratio
Vital Capacity	3.40	0.8	3.95	0.75	2.54



From table 5, the following conclusions can be drawn: It has been observed from the table that mean difference between District and State level Players was found. The State level Players had exhibited significantly better on Vital capacity than their counterpart District level Players.

DISCUSSION:

Karunesh et.al. in their study on comparison of running agility, jumping ability and throwing ability among cricket players also reported significant difference among the state and district players in running jumping and throwing abilities. Similar results have been obtained in our studies as state players performed better than the district players in every aspect. This may be due to the fact that these aspects contribute to a player's success in a Targetball game; as a result, these components receive a lot of attention in training. Second, as players progress

through the stages/levels of competition, the volume/intensity of training rises, potentially improving the various physical fitness components of players. As targetball is pretty similar to Basketball and handball the basic requirement for the athletes for top performance are also similar. So the variables such as Speed, Endurance, Power, Vital Capacity and resting heart rate becomes very important aspect. In Similarity with the present study Ghuman and Singh in their study showed with regards to gross motor aspects and proficiency on the sub-variables a significant difference between district and state level volleyball players. Physical characteristics were significantly different. In Similarity with present study Tierney et.al. in their study of Physical characteristics of different professional rugby union competition levels found a significant difference between players at different competition levels and the study also suggested that professional rugby union players require specific physical preparation for different competition levels. Furthermore, the overall period of training, i.e. training age, is longer for state level players than for Inter district players, which could explain why Inter State Level Players have stronger physical and physiological features.

CONCLUSION

Based on the data and within the scope of the current investigation, the following conclusions are drawn:

1. State-level players and district-level players have significant differences in Physical variables speed, power, and endurance.
2. Physiological variables such resting heart rate and Vital capacity State-level players and district-level players have significant differences [8,9].

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