



A COMPARATIVE STUDY ON SELECTED PHYSICAL FITNESS VARIABLES AMONG GOVERNMENT AIDED AND PRIVATE SCHOOL HOCKEY PLAYERS

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Abstract

The purpose of this study was to find out the comparative analysis of selected physical fitness variables among government aided and private school Hockey players. To achieve the purpose of the study 80 school boys Hockey players were selected static group comparison design was used as subjects from the government aided and private schools in Thoothukudi District, Tamilnadu, India during the academic year 2022– 2023. The age of subjects were ranged from 16 to 17 years. All the subjects were measured on selected physical fitness variables such as agility (Arrow-headed Agility Test), cardio vascular endurance (12 minutes coopers run/walk test) and speed (60 M dash) were used to collect relevant data on the selected independent variables. The collected data from the subjects were statistically analyzed by using the statistical technique of independent 't' test.. In all the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses. It was concluded that there was a significant difference between the criterion variables.

Key words: Physical Fitness, Hockey, agility, cardio vascular endurance, speed.

I. INTRODUCTION

hockey is a fast-paced intermittent team sport that involves physical actions such as walking, jogging, running, sprinting, changes of direction, passing, and hitting. These physical actions require a high level of both anaerobic and aerobic fitness, and both strength and power to complete the tasks (Lythe and Kilding, 2011). These physical actions have been extensively reported in field hockey through the use of time motion analysis (TMA) carried out using global positioning systems (GPS). Time motion analysis is a method that is used to quantify the movement patterns which athletes perform in training or matches (Delaney et al., 2017). Those analyses have found that elite male hockey players cover total distances between 8,000 and 10,000 m in a field hockey match (Jennings et al., 2012a, 2012b; Lythe and Kilding, 2011; White and MacFarlane, 2015).

Nixon (1964) stated physical fitness as the organic capacity of the individual to perform the normal task of daily living without undue tiredness or fatigue having reserves of strength and energy available to meet any emergency demands suddenly placed upon him satisfactorily. While teams have same tactics and skill abilities, a team with higher general fitness is superior team and act more powerful when the game gains speed (Stolen et al., 2005).

Agility is the ability to change the direction of body or its parts rapidly. It is dependent on strength, reaction time, speed of movement and muscular coordination. Quick start and stops and quick changes in direction are fundamental to good performance in Hockey(Singh, 2010).

Cardio vascular endurance refers to the ability of the circulatory system to provide oxygen to the cells to support the oxidative energy system of the body and to expel the waste products of metabolism. When muscles work for longer duration, fatigue limits the amount of work which can be accomplished. Therefore, the primary objective of cardio vascular endurance training is to improve the circulation to the working muscles under the condition of fatigue.

Speed is the ability to perform a movement within a short period of time (Neiman, 1995). To run speedily is not only an athletic event itself, but it is an important factor in almost all court and field games. It is determined by the length and frequency (speed) of strides and mostly dependent upon speed of muscular and neuromuscular coordination (Singh, 2010).

Research findings indicate that Hockey players mostly is dependent on physical fitness variables such as agility, explosive strength of lower extremities, speed, speed endurance, cardio vascular endurance, flexibility etc.

1.1. Purpose of the Study

The aim of the study was to find out the comparative analysis of selected physical fitness variables among government aided and private school Hockey players.

1.2. Methodology

To achieve the purpose of the study, eighty higher secondary level school Hockey players from (Nadar Higher Secondary School, Lakshmi Mills Higher. Secondary School, ST. Pauls Matric Higher Secondary School, , Kamaraj Matriculation. Higher Secondary School) Tihoothukudi district, Tamil Nadu India those who were qualified for district level competition to select static group comparison design (quasi-experimental design) method. The age of the subjects ranged from 16 to 17 years. The based on the data was collected from the subjects were divided into two categories as government aided and private school students. The following physical fitness variables such as agility (Arrow-headed Agility Test), cardio vascular endurance (12 minutes coopers run/walk test) and speed (60 M dash) were used to collect relevant data on the selected independent variables. The collected data from the subjects were statistically analyzed by using the statistical technique of independent't' test.. In all the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses.

2. Analysis of the Data

Table I

Means, Standard Deviation and Independent 'T' Test Values on Agility, Cardio Vascular Endurance and Speed between government aided and private school Hockey players

Group	Criterion Variables	N	Mean	S.D	T - Test
Government Aided School	Agility	40	20.73	.461	8.054*
Private School		40	21.75	.658	
Government Aided School	Cardio Vascular Endurance	40	2616.25	150.37	6.903*
Private School		40	2405.00	121.84	
Government Aided School	Speed	40	7.55	.374	10.411*
Private School		40	8.49	.429	

* Significant level 0.05 $T < 1.990$

The above table shows that the mean and standard deviation value of government aided and private school Hockey players on agility 20.73 & 21.75 & cardio vascular endurance 2616.25 and 2405.00, speed 7.55 and 8.49, , with a standard deviation of the value for government aided and private school Hockey players .374 and .429, .461 and .658, 150.37 and 121.84. The obtained t-test value of government aided and private school Hockey players are 8.054, 6.903 and 10.411* respectively which means the obtained value was greater than the tabulated t-value of 1.990 with df 78 at .05 level of confidence. This means that government aided school had significant difference on agility, cardio vascular endurance and speed, However, the government aided school was significant difference than private school.

The mean values between government aided and private school on agility and cardio vascular endurance and speed among Hockey players were graphically represented in the figure I, II & III.



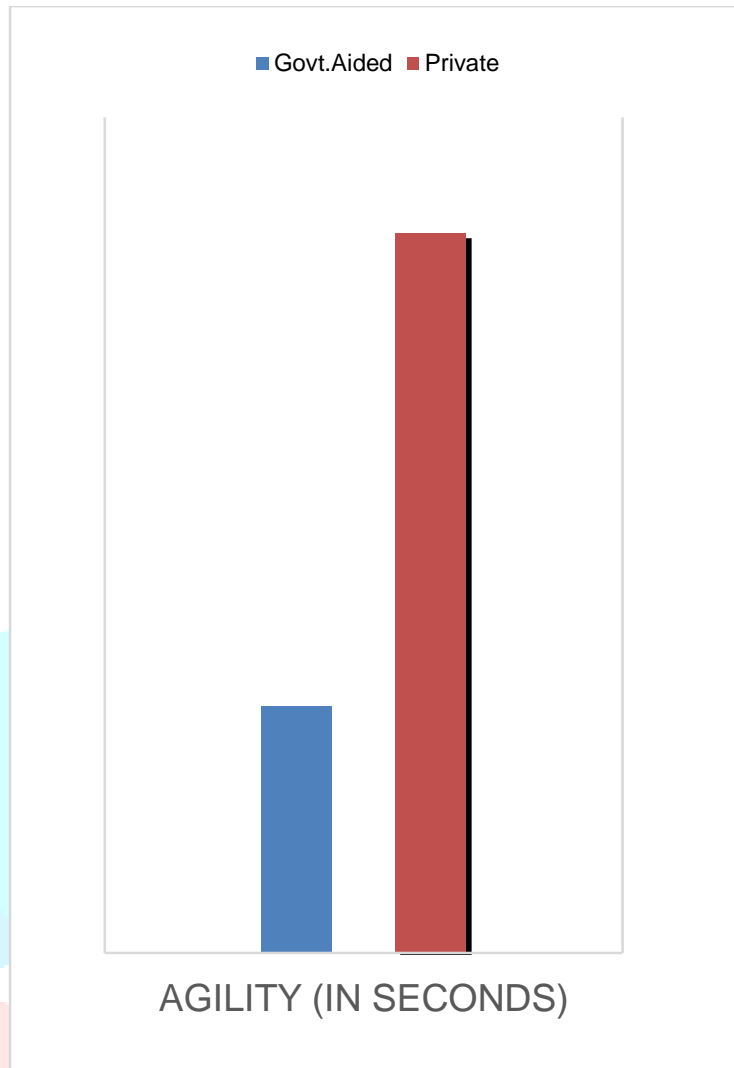
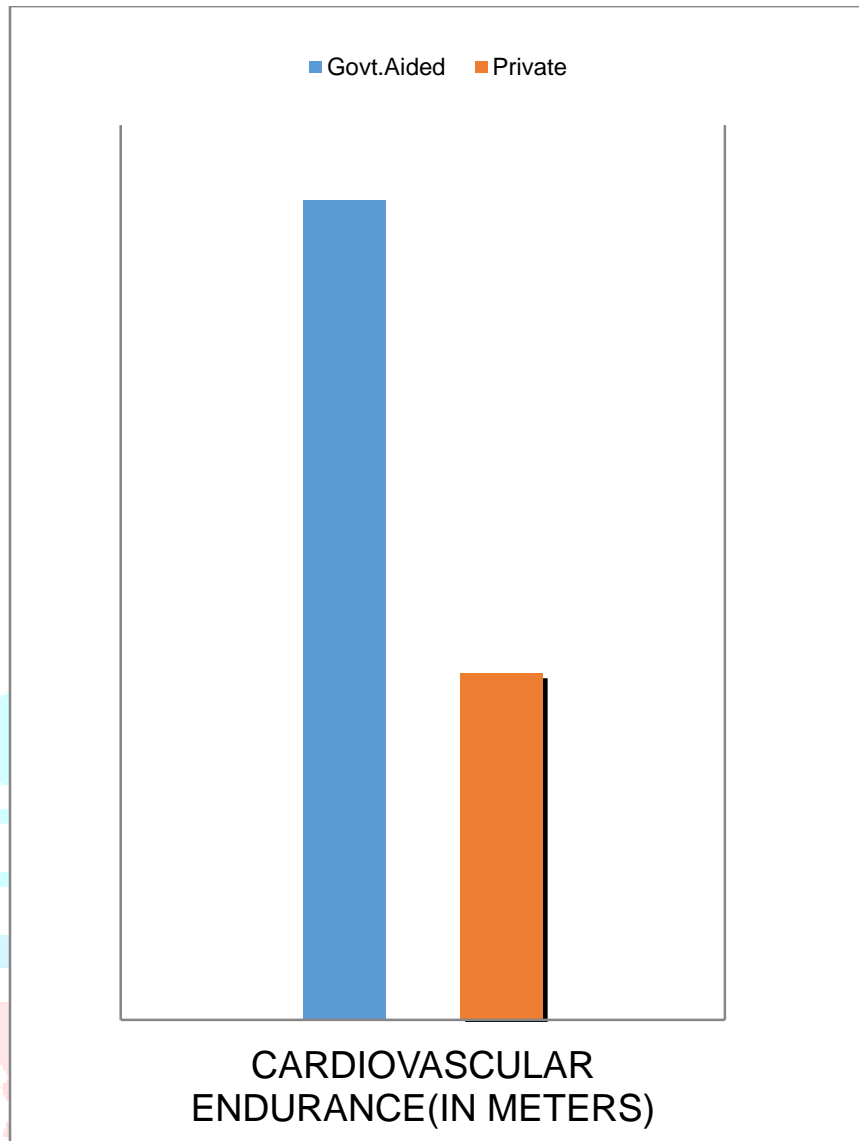


FIGURE I: MEAN VALUE OF AGILITY BETWEEN GOVERNMENT AIDED AND PRIVATE SCHOOL HOCKEY PLAYERS.



FIGUREII: MEAN VALUE OF CARDIO VASCULAR ENDURANCE BETWEEN GOVERNMENT AIDED AND PRIVATE SCHOOL HOCKEY PLAYERS.

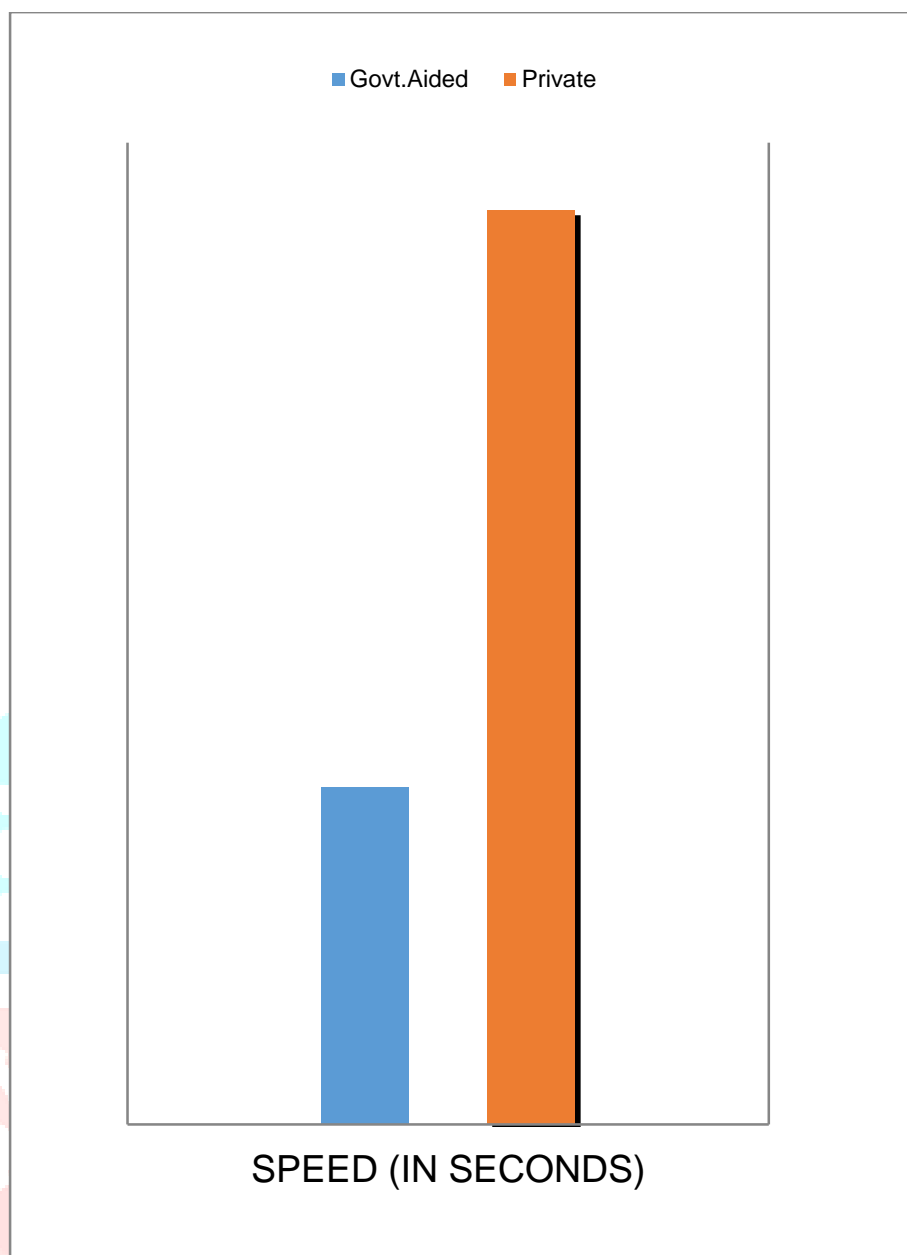


FIGURE III: MEAN VALUE OF SPEED BETWEEN GOVERNMENT AIDED AND PRIVATE SCHOOL HOCKEY PLAYERS.

3. Discussion and Findings

The results of the study indicated that there was significant difference on government aided and private school Hockey players . The government aided school Hockey players had better performance on speed, agility and cardio vascular endurance than the private school Hockey players. In this study was similar to the findings of other studies using those variables as dependent variables such as,

Hooda, Deepak (2020) examined Physical fitness variables (Agility, Explosive strength, Flexibility, Speed, Cardiovascular endurance), Psychological variables (Emotional intelligence and its components Self-awareness, Empathy, Self-motivation, Emotional stability, Managing relations, Integrity, Self-development, Value orientation, Commitment, Altruistic behavior), Physiological parameters (Vital capacity, Blood pressure, Heart rate, VO2 Max) and Body mass index among Football player at different playing positions. The results revealed significant difference on vital capacity, heart rate in males and agility, flexibility, emotional intelligence and vital capacity in females.

Lohith & Suthakar, (2016) compared the selected physical fitness variables of the Physical Education Professional students participated in the different competition levels. It was concluded that there was a significant difference in the Pull Ups, Sit Ups and Speed of the Physical Education Professional students participated in the different competition levels. A better understanding of these relationships will help to understand the power and endurance and also help to plan sport specific strength training at South Zone, All India and National level athletes.

Gaurav, Singh & Singh, (2015) examined the level of physical fitness among male football players in relation to their different playing positions i.e. goalkeepers, defenders, midfielders and attackers. However, midfielders and attackers had shown better power and agility than their counterparts; goalkeepers and defenders. Further, significant differences were found between football players of different playing positions with regard to the variables power ($p < 0.05$) and agility ($p < 0.05$), but insignificant differences were found on the variable speed respectively ($p > 0.05$).

Begum, (2015) observed the relationship between intelligence and motor fitness of school level cricketers and footballers. Footballers group was better in both intelligence and motor fitness than cricketers group. Therefore, it may be concluded that better the motor fitness, there should be a fair chance of exhibiting of intelligence level also high.

Pokala, R. (2016). examined the level of physical fitness among Private and Government School Cricket Players in Vizianagaram District. The private school cricket players were better in the agility and speed, the government school cricket players were better in the cardio-vascular endurance than private school cricket players.

4. Conclusions

From the results obtained, the following conclusions were drawn,

There was a significant difference existed on speed, agility and cardio vascular endurance between government aided and private school Hockey players.

Hence the government aided school Hockey players were found significant better than the private Hockey players on selected physical fitness and variables such as speed, agility and cardio vascular endurance.

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