FITNESS RELATED TO PERFORMANCE VARIABLES OF HOCKEY PLAYERS

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Abstract

The purpose of the study was to find out the relationship between Fitness and Performance variables of hockey players in Kerala state. The sub problem of the study is to identify those significant Fitness and Performance variables which do contributes to elite performances among hockey players in Kerala state. The subjects were 100 male university level hockey players of Calicut University, M.G. University, and Kerala University and their age ranged from 17 to 25 years.

Keywords: hockey, physical fitness, Physical performance

Introduction

Sport is all forms of physical activity which, through casual or organized participation, aim to use, maintain or improve physical fitness and provide entertainment to participants. Sport may be competitive, where a winner or winners can be identified by objective means, and may require a degree of skill, especially at higher levels. Hundreds of sports exist, including those for a single participant, through to those with hundreds of simultaneous participants, either in teams or competing as individuals.

History of Hockey

It is an ancient game that is played in India for years. Also, the game is always played with a stick and a ball. Before 1272 BC it was played in Ireland and during 600 BC ancient Greece used to play it. Around the world, there are many variations of the game known by the name ice hockey, field hockey, street hockey, sled hockey, and roller hockey.

Importance of Hockey

The game has much importance in India as it has chosen it as its national game. Also, India has a bright and big deep-rooted history related to sports. In addition, India has many brilliant players that played for the country and it is the oldest known game in the country.In conclusion, Hockey is the national game of India but it was never declared officially. But, we can make this official by bringing the golden period of hockey back once again. Currently, our hockey team lacks support from the government but with our support they can bring the glory days of hockey back.

Physical fitness

Physical fitness is the ability to do the body to perform strenuous exercise too. It is the relation of one's ability to work or play with vigour and pleasure without undue fatigue and with sufficient energy for unforeseen emergencies. Physical fitness is the ability to last, to bear up and to preserve under difficult circumstances where an unfit person would give up.

In sports, successful performance in competition depends substantially on the physical and physiological fitness, body composition, muscular performance, neuromuscular capability and mental ability of the players.

'Fit people make a fit nation' the term fitness includes physical fitness, physiological fitness, mental fitness, social and spiritual fitness. Physically fit people are able to do without fatigue for longer periods and are better equipped to tolerate physical stress.

Selection of subjects

The subjects were 100 University level men hockey players who have participated in Inter Collegiate men Hockey Tournaments of any of three universities in the state of Kerala namely University of Kerala, Mahatma Gandhi University and University of Calicut and their age were between 18 and 25 years.

Collection of data

The data for the purpose of this study was collected from hockey men team fielding colleges from the three universities of Kerala state namely University of Kerala, Mahatma Gandhi University and University of Calicut. Hundred men Hockey players were evaluated from nine colleges such as University College, Thiruvananthapuram; Government Arts College, Thiruvananthapuram; College of Engineering, Thiruvananthapuram; U.C. College, Aluva; Maharajas College, Ernakulam; St Albert's College, Ernakulam, St Thomas College, Thrissur; Christ College, Irinjalakuda and Zamorin's Guruvayoorappan College, Kozhikode.

Selection of the variables and test items

The list of selected physical fitness and performance variables used for the study

Sl.No	Variable	Test
1	Speed	50mts. Dash
2	Agility	4x10 mts. Shuttle Run
3	Cardio-respiratory endurance	Nine Minute Run / Walk Test

Selection of tests

Standard tests were used to measure the selected Physical fitness variables of this study. The selected variables and their respective tests and instruments used for this study.

Selected variables and their respective tests and instruments

Sl.No	Test	Instrument used
1	50 mts. Dash	Stop watches, Whistle
2	4x10 mts. Shuttle Run	Stop watches, Whistle
3	Cardio-respiratory Endurance	Stop watch, Measuring tape

Criterion measures

The criterion measures of the selected Physical and Performance variables used

1. Speed was recorded in $1/100^{th}$ of a second.

2.   Agility was recorded in $1/100^{th}$ of a second.

3.   Cardio-respiratory endurance was recorded in metres

Reliability of data

Reliability of the data was ensured by tester's competency and instrument reliability.

Tester's Competency

All the measurements on the different selected variables in this study were taken by the investigator with the help of assistants. From the research point of view, it is very important to be familiar in using the various instrument and hence, the investigator had undergone training under an expert, inorder to ensure the reliability of measurements taken. After a series of practice sessions, the tester's competency was statistically analysed and established by using the test-retest method, the correlation coefficient values were very high, the tester's competency in taking measurements were accepted.

Coefficient of correlation done on the test-retest method to assertain the competency of the tester

Sl. No	Tests / Methods used	Variables measured	Coefficient of correlation
1	50 mts. Dash	Speed	0.92
2	4x10 mts. Shuttle run	Agility	0.97
3	9 Minute run / walk test	Cardio-respiratory endurance	0.91

The procedure and administration of the tests

1.50 mts. Dash (Speed)
Purpose : To measure Speed

Equipment : Stop watches with a split second timer.

Test description :

It is preferable to administer this test by two pupils at a time. Both take positions behind the starting line. The starter will use the commands "Are you ready?" and "Go!" The second instruction will be accomplished by a downward sweep of the starter's arm to give a visual signal to the timer who stands at the finish line.
Scoring:

Recorded in $1/100^{th}$ of a second.
2. 4x10 mts. Shuttle run
Purpose: The purpose of the test was to measure the ability to rapidly change body position and direction while running.
Equipment: Stop watches
Test description

To measure Agility, two lines were marked parallel to each other and 10 metres apart on the ground. The subject stood behind one of the lines and two blocks were kept beyond the other line. On the signal 'Start' the subject ran to the blocks. Took one block and returned to the starting line and placed the block behind the line. The subject again ran to the second block which is carried across the starting line on subject's way back. Two subjects were allowed to run together.
3.Cardio- respiratory endurance -Cooper's nine minute run/walk test
Purpose: To measure Cardio-respiratory endurance.
Equipment: Stop watch, whistle or starter's pistol, measuring tape.

Test description:

The subjects assemble behind the starting line. On the "start" signal, they run or walk as far as possible within the 12 minute time limit.An experienced pacer should accompany performers around the running area during the actual test. Performers should remain where they finished long enough for test administrators to record the distance covered. Ample time should be given for warm up as well as post-test Cool down.

Scoring: Score is distance measured in metres.

Statistical techniques used for the study

Various descriptive profiles like mean, standard error of mean, median, mode, standard deviation, variance, skewness, kurtosis, standard error of skewness, standard error of kurtosis, range, minimum score, maximum score, 25th percentile, 50th percentile and 75th percentile of the selected fitness and performance variables namely Speed, Agility, Cardio- respiratory endurance.

Findings

The findings of the study are detailed below:

Descriptive profiles of selected physical fitness variables of male hockey players

Variables	Speed	Agility	Cardio-respiratory endurance
Mean	7.21	15.66	4294.55
SE of Mean	0.03	0.04	27.74
Median	7.10	15.60	4280.0
Mode	7.10	15.70	4000.0(a)
Standard deviation	0.29	0.37	277.40
Variance	0.09	0.14	76953.08
Skewness	0.78	0.47	-0.49
SE of Skewness	0.24	0.24	0.24
Kurtosis	-0.16	0.023	-1.25
SE of Kurtosis	0.48	0.48	0.48
Range	1.20	1.34	785.00
Minimum Score	6.60	15.06	3805.0
Maximum Score	7.80	16.40	4590.0
25th percentile	6.92	15.40	4000.0
50th percentile	7.10	15.60	4280.0
75th precentile	7.30	15.80	4550.0

a multiple modes exist. the smallest value is shown

Correlation matrix of selected physical fitness variables of male hockey players

Variables	Speed	Agility	Cardio-respiratory endurance
Speed	1.000	0.594 0.000*	-0.207 0.039#
Agility		1.000	-0.595 0.000*
Cardio-respiratory endurance			1.000

*Significant as the sig value is less than 0.01

significant as the sig value is less than 0.05, as the case may be.

The above table shows significant relationship were found among a majority of the different selected Physical fitness variables and are among Speed and Agility, Speed and Cardio-respiratory endurance. Besides, significant relationship were found among Agility and Cardio- respiratory endurance.

Discussion of findings

Significant relationships were found among a majority of the different selected Physical fitness variables. On the other hand, no significant relationship were also found between certain selected Physical fitness variables, this might be due to the fact that different methods of assessing physical fitness are not measuring identical proportions or components. Total physical fitness is a function of the type of stimulus, the intensity at which the stimulus is performed and the duration of a single episode. Over an extended period, the frequency with which an exercise is performed is important.

Since, fitness refers to the readiness for performance with special regard to big muscle activity without undue fatigue and is concerned with the capacity to move the body efficiently with force over a responsible length of time (Parteban, 2012). Back strength is very important to hockey players, as in hockey, players need to bend forward to the ground for maximum groundwork and to cover a wider range of around movements during the game (Sodhi 1991), which induces maximum strain indices over the back muscles and abdominal muscles during the entire duration of the game (Koley, Jha and Sandhu, 2012).

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