International Journal of Physical Education, Sports and Health 2021; 8(3): 482-484

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2021; 8(3): 482-484

www.kheljournal.com
Received: 17-04-2021
Accepted: 21-05-2021

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Influence of physical fitness on the performance among hockey players of Karnataka state

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Abstract
In order to reach optimum performance in hockey games the different components of physical and motor fitness such as endurance, power, strength, speed, agility, flexibility, balance etc are pre-requisite. A player will not be able to perform his best during training and competitions unless optimum development takes place. The purpose of the study was to analyze the influence of physical fitness on the performance of hockey players of Karnataka State. To achieve the purpose of the study total 140 hockey player's samples were drawn for the study from various SAI sports hostels of Karnataka State ranging between 14-16 years of age. The AAPHER Physical Fitness Tests and SAI Hockey Skill Test (1992) were administered to the subjects. The results of the study concluded that the high physical fitness hockey players groups are having very good shooting skills, ball balancing and controlling ability in the hockey game than the low physical fitness players group.

Keywords: Physical fitness, shooting, goal, balance, control, hockey

Introduction
In order to reach optimum performance in hockey games the different components of physical and motor fitness such as endurance, power, strength, speed, agility, flexibility, balance etc are pre-requisite. A player will not be able to perform his best during training and competitions unless optimum development takes place.

Physical education and sports scientists have made numerous efforts to identify the factors underlying skilful performance in various games and sports. For different types of sports the definition of skilful performance would vary and so would the components constituting performance.

In hockey as in many other sports and games, a player can attain excellence at an early age only if he starts his career in early boyhood. An early starter, like an early rider, has time for the acquisition of manifold athletic abilities, fundamental skills and Tactics which are essential for becoming a grand player. In the advanced countries, training of athletes and players start quite early in life. Learning individual tactics leads to the acquisition of group and team tactics.

The methodology of teaching tactics may vary. However, young trainees should know more than what they are able to practically demonstrate at any given moment. Weaknesses and short one coming should be analyzed and removed during the learning process in order to create a sound base.

A youngster with all-round technical and Tactical training has good chance of becoming an excellent player (Elferink-Gemser, Visscher, Lemmink, & Mulder, 2004; Pienaar, Spamer & Steyn 1998; Regnier, Salmela & Russell 1993; Reilly, Williams, Nevill & Franks 2000).

Hockey is one of the oldest games in history it seems to have been an Asian game and was probably known to the Greeks. About thirty year age, a sculptured base relief dating back to 480 B.C. was discovered, which depicted half a dozen children playing a ball game with crooked sticks. Hockey game has been proved to be highly competitive sports in the world and this game offers a wide range of opportunity for the development of motor abilities i.e. strength speed, endurance, flexibility, agility and co-ordination and other psychological and physiological variables.

Statement of the problem

The purpose of the study was to analyze the influence of physical fitness on the performance of hockey players of Karnataka State.

Objectives of the study

1. To study the effect of physical fitness on balancing the ball, moving with ball and goal shooting performance among hockey players.
2. To find out relationship between the physical fitness and balancing the ball, moving with ball and goal shooting performance among hockey players.

Materials and methods

The sample

The total 140 hockey player's samples were drawn for the study from various SAI sports hostels of Karnataka State ranging between 14-16 years of age. The sample design as under:

Table 1: Sample Design

Category	Variables	Hockey Players	Total
Boys	Low Physical fitness	70	140
	High Physical fitness	70	

Tools

1. AAPHER Physical Fitness Tests

Prior to game skill testing the subjects were undergone AAPHER physical fitness tests and based on the data they were divided equally into two groups.

2. SAI Hockey Skill Test (1992)

a) Shooting on Target
b) Balancing the ball on stick
c) Moving with the ball

Description Game Skill Variables (SAI Hockey skill test)

a) Shooting in the Target

This test item is aimed at measuring the ball shooting ability of the hockey player.

Equipment: Hockey sticks, hockey synthetic balls, two flag posts, measuring tapes and marking powder.

Test/Target Dimensions: A target is formed by pegging two flag posts (each of two meters height) at a distance of one meter from each other. A restraining line at a distance of ten meters from the target is marked on the ground. Ten balls are placed near the shooting spot on the restraining line. The subject is asked to hit all the ten balls into the target one by one.

Scoring and Evaluation: The number of accurate hits is scored.

b) Balancing the ball on the stick: this test item is aimed to measure the balancing ability of the hockey player.

Equipment: Hockey stick and synthetic balls.

Test Procedures: The subject is asked to balance the ball on the blade of the hockey stick continuously for the maximum duration possible. Up to the 11 years age group, the subject allowed placing the ball on the stick with hand while in case of the subject of 12 years and above, the ball is to be lifted from the ground by the subject with the help of the hockey stick and continue balancing. The subject may move around, if needed to maintain the balance of the longest duration. The moment the ball is placed on the stick or lifted from the ground and brought under control on the stick, a stopwatch is starter and the moment the ball falls down from the stick, the stopwatch is stopped and the time is recorded accurate only up to seconds. Two trials may be given.

Scoring and Evaluation: Out of the two trails, the better one, longer duration time is converted to points with the help of SAI norms enlisted in the table below.

c) Moving with the ball

This test item is aimed to measure the ball controlling ability of the hockey player when moving with the ball.

Equipment: A stopwatch, hockey stick, synthetic balls, tape and marking powder.

Test Dimensions: Two horizontal lines, one called starting line and the other end line, are marked at a distance of 20 meters.

Test Administration: The subject must stand behind the starting line by holding the hockey stick in both the hands; the hockey ball must be placed on the start line. On the signal, 'Go'! The subject must start moving forward by rolling the ball with the stick without breaking the contact of the blade of the stick on the ball and try to cross the finish line with the ball as early as possible. The forward movement of the ball with the blade of the stick should be rolling movement. A stopwatch is started simultaneously to the signal 'Go' and is stopped as soon as the ball and the subject cross the finish line. Each subject is given two trials and better of the two is considered for evaluation.

Scoring and Evaluation: The minimum time taken to reach the end line with the ball is scored.

Test Administration and Data Collection

Prior testing the purpose of the study was explained to the players and coaches as well, during the process requirement of the testing procedures, demonstration and explanation of various game skill tests to be administered were given to acquaint them with the requirement of the study.

All the players voluntarily participated in the study, their coaches exhorted them as well to put in their best effort in this scientific investigation, though no special motivational technique was used yet the players were very enthusiastic and cooperative throughout the process of data collection.

Results and discussions

Based on the statistical data analysis the following tables were drawn and discussions are presented below.

Table 2: Mean and SD scores of Shooting on Target Skill test of 14-16 years Hockey players of Karnataka state at two levels of Physical Fitness

Test	Physical Fitness level	Mean	SD	Total
Shooting on Target Skill test	High	9.35	0.65	4.56**
	Low	7.14	0.54	

**Significant at 0.05 level

Table.No.1 presents the Mean and SD scores of shooting on Target Skill test of high and low physical fitness 14-16 years hockey players group of Karnataka state. The mean score of high physical fitness hockey players group (9.35) is higher than the and low physical fitness hockey players group (7.14). The t-value (4.56) is significant at 0.05 level. The mean values and t-value reveals that there is a significant difference in the performance of high and low physical fitness 14-16 years hockey players groups of Karnataka state in the Shooting on Target Skill test. In other words, it is interpreted that the high physical fitness hockey players group are having

very good shooting skills in the hockey game than the low physical fitness players group.

Table 3: Mean and SD scores of Balancing the ball on stick Skill test of 14-16 years Hockey players of Karnataka state at two levels of Physical Fitness

Test	Physical Fitness level	Mean (in secs.)	SD	Total
Balancing the ball on stick skill test	High	93.14	7.06	17.28**
	Low	65.24	4.12	

**Significant at 0.05 level

Table.No.2 presents the Mean and SD scores of Balancing the ball on stick skill test of high and low physical fitness 14-16 years hockey players group of Karnataka state. The mean score of high physical fitness hockey players group (93.14) is higher than the and low physical fitness hockey players group (4.12). The t-value (17.28) is significant at 0.05 level. The mean values and t-value reveals that there is a significant difference in the performance of high and low physical fitness 14-16 years hockey players groups of Karnataka state in the Shooting on Target Skill test. In other words, it is interpreted that the high physical fitness hockey players group are having very good ball balancing ability in the hockey game than the low physical fitness players group.

Table 3: Mean and SD scores of Moving with the ball Skill test of 14-16 years Hockey players of Karnataka state at two levels of Physical Fitness

Test	Physical Fitness level	Mean (in secs.)	SD	Total
Moving with the ball Skill test	High	110.14	12.32	14.36**
	Low	142.46	7.16	

**Significant at 0.05 level

Table.No.3 presents the Mean and SD scores of moving with the ball skill test of high and low physical fitness 14-16 years hockey players group of Karnataka state. The mean score of high physical fitness hockey players group (110.14) is higher than the and low physical fitness hockey players group (142.46). The t-value (14.36) is significant at 0.05 level. The mean values and t-value reveals that there is a significant difference in the performance of high and low physical fitness 14-16 years hockey players groups of Karnataka state in the Shooting on Target Skill test. In other words, it is interpreted that the high physical fitness hockey players group are having very good ball controlling ability in the hockey game than the low physical fitness players group.

Conclusions

The high physical fitness hockey players group are having very good shooting skills, ball balancing and controlling ability in the hockey game than the low physical fitness players group.

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