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A Comparative Analysis of Physical Characteristics among Women Hockey Players from the North and West Zones

Ms. Puja Kumari [1] and Dr. Sujay Bisht [2]
[1] Ph.D. Scholar, LNIPE, NERC, Guwahati
[2] Assistant Professor, LNIPE, NERC, Guwahati

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ABSTRACT

The purpose of conducting this study was to compare the performance of physical attributes between north and west zone of women hockey players. For conducting this study forty women hockey players were selected, twenty players from north zone (SAI Lucknow) and twenty from west zone (M.P Academy) with their age ranging between 18 to 25. Data was collected by conducting some of the test like for speed endurance yoyo test was used, for agility T test used, for strength endurance sit ups was used and in order to check flexibility sit and reach test was used. The data was analyzed by calculating the mean and standard deviation for descriptive purposes. To compare the performance between groups, an independent t test was used, with the significance level set at 0.05. The result revealed that north zone player was better in speed endurance and agility and east zone players was found better performance in strength endurance and flexibility.

Introduction

Two teams compete in the team sport of hockey, with each team consisting of eleven players, including a goalkeeper and ten field players. Teams are required to whack a hockey stick towards the opposing team's shooting circle and then into the goal in order to move the ball around the field. The team with the highest number of goals wins the game.

As we know physical attributes plays very significantly role in performance of field hockey players. Field hockey is a game of speed endurance that requires players to constantly move around the field, transitioning between offensive and defensive positions. Speed endurance enables player to sustain their speed and agility through the game, allowing them to cover more ground efficiently. In addition to this, hockey players often need to make rapid recoveries after exerting bursts of speed. Speed endurance helps player recover quickly between sprints, enabling them to maintain a high level of performance throughout the match without experiencing significant fatigue.

Like speed endurance, speed is a fundamental attribute in field hockey, speed is essential for both offensive and defensive players. Offensively, speed enables player to break away from defenders, create scoring opportunities, and execute fast-paced counterattacks. Defensively, speed allows players to track back quickly, intercept passes, and apply pressure on opposition attackers, disrupting their rhythm and reducing their scoring chances.

Field hockey is a dynamic sport characterized by rapid transitions between offense and defence. Speed plays a crucial role in these transitions, allowing player to quickly move from one phase of play to another. Whether it's transitions, allowing player to quickly move from one phase of play to another. Whether it's transitioning from defence to offense to launch a counterattack or sprinting back to defend after losing possession, speed enables player to adapt quickly to changing situations on the field.

Agility and flexibility also play crucial role in field hockey, enhancing performance and reducing the risk of injury. Hockey is a fast-paced game that requires players to quickly change direction, accelerate and decelerate. Agility allows players to navigate the field more efficiently and create scoring opportunities. Agile players can effectively mark opponents, intercept passes and make tackles. They can react swiftly to changes in play, closing down the space and limiting the opposition's option.

Flexibility in the body enables player to reach for the ball more effectively, execute dynamic dribbling moves, and maintain possession under pressure. It also contributes to a wider range of motion, allowing players to receive and pass the ball with greater accuracy. Flexibility helps to prevent injuries by allowing the body to move freely and reducing the strain on muscles and joints.

In essence, speed endurance, speed, agility and flexibility are fundamental components of a field hockey player's skill set, influencing their ability to move effectively, control the ball, defend and stay healthy.

Aim of the study

The purpose of the study is to compare the physical characteristics of north and west zone of women hockey players of sports authority of India (SAI).

Methodology

Selection of Subjects

To achieve the goal of the study forty (N=40) women hockey players, twenty from north zone and twenty from west zone were selected as subjects from Sports Authority of India of with their age ranging between 18 to 21 years.

Selection of Variables

Physical variables were speed endurance, speed, agility and flexibility.

Administration of test and collection of data

Physical variables	Test
Speed Endurance	Yoyo test
Agility	T test
Strength endurance	Sit ups
Flexibility	Sit and reach

Statistical Procedures

The data was analyzed by calculating an independent T test with the significance level set at 0.05.

Results

The result of the two zones of women hockey players of SAI has been investigated on the basis of the independent T test, their descriptive statistics and an analysis of speed endurance, speed, agility and flexibility has been presented in the following tables.

Table 1

Descriptive Statistics of Yoyo test of south and east zone

Zone	N	Mean	Std deviation	Std error mean
North	20	15.51	1.08	.24336
West	20	14.73	.99	.22208

Table 1 displays the mean, standard deviation, and standard error of mean values for women's hockey players in the north and west zones. The north zone's mean is higher than the west zone's. However, examining the t-value and related p-value will show whether or not this difference is significant.

Table 2

Independent sample T test of Yoyo test

Zone	Mean	S.D.	Mean diff.	SE of mean diff	t-value	P value	F-value	p value
North	15.51	1.08	0.78	.329	2.383	.02	.297	.589
West	14.73	.99						

Table 2 show that the t-statistic value is 2.383. Given that its p value is 0.02—less than the.05. this t-value is significant. As a result, the null hypothesis that the population means of the two zones are equal is disproved, and it can be said that women hockey players in the north zone perform better in terms of speed endurance than those in the west.

Table 3

Descriptive Statistics of agility test of south and east zone

	Zone	N	Mean	Std deviation	Std error mean
Score	North	20	11.77	.70	.15871
	West	20	10.16	.50	.11199

Table 3 displays the mean, standard deviation, and standard error of mean values for women's hockey players in the north and west zones. The north zone's mean is higher than the west zone's. However, examining the t-value and related p-value will show whether or not this difference is significant.

Table 4

Independent sample T test of Agility test

Zone	means	S.D.	Mean diff.	SE of mean diff	t-value	P value	F-value	p value
North	11.77	.70	1.61	.194	8.288	.00	2.45	.126
West	10.16	.50						

Table 4 show that the t-statistic value is 8.288. Because its p value is 0.00, which is smaller than the.05., this t-value is significant. As a result, the null hypothesis that the population means of the two zones are equal is disproved, and it can be said that women hockey players in the north zone perform better in terms of agility than those in the west.

Table 5

Descriptive Statistics of strength endurance

	Zone	N	Mean	Std deviation	Std error mean
Score	North	20	44.55	10.29	2.302
	West	20	55.90	5.45	1.220

Table 5 represents the mean, standard deviation and standard error of the mean for women hockey players from the north and west zone of women hockey players. The mean of west zone is higher than that of north zone. However, to determine if this difference is statistically significant, the t-value and its corresponding p value will be examined.

Table 6

Independent sample T test of strength endurance

Zone	means	S.D.	Mean diff.	SE of mean diff	t-value	P value	F-value	p value
North	44.55	10.29	11.35	2.60	-4.355	.000	10.26	.003
West	55.90	5.45						

Table 6 shows the value of t-statistics is -4.355. and this value is considered significant because its p-value is 0.00, which is less than 0.05. As a result, the null hypothesis which assumes equal performance

between the two zones, is rejected. Therefore, it can be concluded that the strength endurance performance of women hockey players from the west zone is better than that of the north zone.

Table-7

Descriptive Statistics of flexibility test

	Zone	N	Mean	Std deviation	Std error mean
Score	North	20	43.65	9.64	2.157
	West	20	61.90	4.59	1.028

Table 7 presents the mean, standard deviation and standard error of the mean for women hockey players from the north and west zones. The mean value from the west zone is higher than that of the north zone. However, to determine if this difference is statistically significant, the t-value and its corresponding p-value will be examined.

Table 8

Independent sample T test of strength endurance

Zone	means	S.D.	Mean diff.	SE of mean diff	t-value	P value	F-value	p value
North	43.65	9.64	18.25	2.38	-7.636	.000	5.020	.031
West	61.90	4.59						

Table 8 The t-statistics is -7.636. and this value is considered significant because its p-value is 0.00, which is less than 0.05. therefore, the null hypothesis which assumes that the performance means of the two zones are equal, is rejected. It can be concluded that the flexibility performance of women hockey players from the west zone is better than that of the north zone.

Discussion of findings

The purpose of conducting the study was to compare performance of physical characteristics like speed endurance, agility, strength endurance and flexibility of two different zone of women hockey players. The findings of the study indicates that there was significant difference of north and west zone of women hockey players.

The data was collected by using yoyo test, T test, sit ups and sit and reach test. After collecting the data, data was analyzed by using independent t test at 0.05 level of significance.

The result of the study shows that the women hockey players of north zone was better in terms of speed endurance and agility, meanwhile west zone player was good in flexibility and strength endurance.

Conclusion

Based on the data collection and analysis of the study, it was concluded that this study will be helpful for the players of north and west zone of women hockey players by knowing their performance of physical attributes. They can also change their training program in order to improve the performance.

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