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Morphological and physical fitness profile of national and state level hockey players

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Abstract

The aim of this study was to assess the Morphological and Physical Fitness profile of National and State Level female hockey players. Total 26 female hockey players were selected by purposive sampling method from sports hostel of Department of Education Himachal Pradesh. The subjects were divided in two groups: National Players (N=13) and State players (N=13). Morphological Variables i.e., Standing Body Height, Body Weight and BMI (Body Mass Index) and Physical Fitness variables i.e. Muscular strength, Speed and Agility were taken for the present study. After collection of data, the data was analyzed by using statistical techniques as Mean, Standard Error of Mean and Mean difference etc. The finding of this study conclude that National Level female hockey players performed better in all Morphological variables (i.e. Weight, Body Mass Index except Height than State Level female hockey players and the national group of hockey players also performed better in all Physical Fitness Variables (Viz. Muscular Strength, Speed and Agility) than State Level female hockey players.

Keywords: National players, state players, morphology, physical fitness & body mass index

1. Introduction

It has long been known that successful performance in team games - such as field hockey - is influenced by morphological characteristics such as body size and composition, functional parameters (physical capacity) and fitness (explosive strength, maximum speed, anaerobic and aerobic capacity, agility) (Bril, 1980; Ayrapetyanz & Godik, 1991; Nikitushkin & Guba) [3, 2]. Therefore, for better sport performance, selection of athletes and their training process can be based upon their morphological and physiological status and fitness parameters.

Modern field hockey is a fast, physically and technically demanding sport. Success in field hockey is ultimately depending on a cluster of factors among which we may include different components of physical fitness such as speed, endurance, strength, flexibility, agility, coordination, etc. Many coaches include fitness testing among their training control strategies to detect strong and weak points both at individual and group levels.

Field hockey is a highly structured analytical game in which players constantly have to deal with a complex and rapidly changing environment (Starkes, 1993b) [19]. In order to be successful, they have to perform the right action at the right moment. Therefore, they have to acquire great tactical skills. Tactical expertise is a requisite for expert performance in virtually all achievement domains (Janelle and Hillman, 2003) [8]. The present study identify and compare the Morphological variables (Viz. Height, Weight, Body Mass Index) and Physical Fitness Variables (Viz. Muscular Strength, Speed, and Agility) of National and State Level female hockey players.

2. Methodology

The female hockey players who were the trainee of sports hostel of Department of Education Himachal Pradesh was the population for present research. Total 26 female hockey players were selected by purposive sampling method from sports hostel. The subjects were divided in two groups: National Players (N=13) and State players (N=13). The players who had played in School National games and other junior national level were taken up as National Level Hockey players; whereas State Level Players were considered, those players who have participated up to state level tournaments of hockey.

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These players were the resident trainees of State Hockey Girls Hostel Majara (Sirmour) which is functioning under the control of education department of Himachal Pradesh.

2.1 Objective of the study

1. To assess the Morphological Profile (Viz. Height, Weight, Body Mass Index) of National and State Level female hockey players.
2. To measure the Physical Fitness Variables (Viz. Muscular Strength, Speed and Agility) of National and State Level female hockey players.
3. To compare the Morphological and Physical Fitness Variables of National and State Level female hockey players.

2.2 Variables Selected & Tools Used

Standing Body Height, Body Weight and BMI (Body Mass Index) were taken as Morphological Variables for Physical Fitness Variables; Medicine Ball Put was used to assess the strength of Hands. 50 M dash was taken up to assess the Speed and Agility was measured with the help of 4X10 M shuttle Run of the all subjects. After collection of data, the data was analyzed by using statistical techniques as Mean, Standard Error of Mean and Men difference etc. Further ‘t’ test was used to compare the Morphological and Physical Fitness Variables of National and State Level female hockey players.

Table 3: Comparison of Morphological Profile of National & State Hockey Players (n=13)

Variables	National Hockey Players	State Hockey Players	t	Sig. (2tailed)	Mean Difference
Height	157.23	151.69	1.78	.087	5.53
Weight	50.30	39.76	4.37	.000	10.53
BMI	20.31	17.13	5.49	.000	3.17

From Table 3 we can see the comparison of morphological components between national and state hockey players and it was found that national players and state hockey players were found similar when compare for height the ‘t’ value of height 1.78 is not significant at 0.01 level of significance. In case of weight the national hockey players were found heavier than state hockey players. In the same way the national players were also having higher body mass index than their state level counterpart, the ‘t’ value of Body Mass Index 5.49 is also significant at 0.01 level of significance.

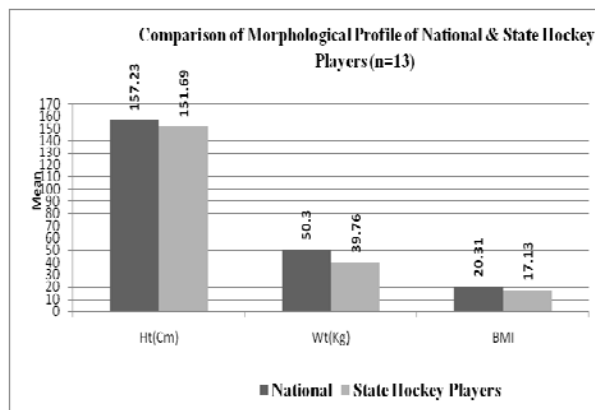


Fig 1: Comparison of Morphological Profile of National & State Hockey Players (n=13)

3. Result and discussion

Table 1: Descriptive Statistics of Morphological Profile of National Hockey Players (n=13)

Variables	Mean	SD	SEM
Height	157.23	5.74	1.59
Weigh	50.30	5.02	1.39
BMI	20.31	1.48	.412

Table 1 shows the mean performance of Morphological Profile Viz, Body Height, Weight and Body Mass Index of National Hockey players. It was 157.23 cm (SD=5.74 cm), 50.30 Kg (SD=5.02 kg) and 20.31(SD=1.48) respectively.

Table 2: Descriptive Statistics of Morphological Profile of State Hockey Players (n=13)

Variables	Mean	SD	SEM
Height	151.69	9.61	2.66
Weight	39.76	7.09	1.96
BMI	17.13	1.46	.405

It was evident from Table 2 that, the mean performance of Morphological Profile Viz, Body Height, Weight and Body Mass Index of State Hockey players. It was 151.69 cm (SD=9.61 cm), 39.76 Kg (SD=7.09 kg) and 17.13(SD=1.46) respectively.

Table 4: Descriptive Statistics of Physical Fitness Profile of National Hockey Players (n=13)

Variables	Mean	SD	SEM
Speed	3.41	.470	.130
Muscular Strength	3.84	.469	.130
Agility	10.27	.700	.194

Table 4 shows the mean performance of Physical fitness Profile Viz, Speed, Muscular Strength and Agility of National Hockey players. It was 3.41 Sec. (SD=.470 sec.), 3.84 Mt. (SD=.469 Mt.) and 10.27 Sec. (SD=.700 Sec.) respectively.

Table 5: Descriptive Statistics of Physical Fitness Profile of State Hockey Players (n=13)

Variables	Mean	SD	SEM
Speed	4.06	.497	.137
Muscular Strength	2.70	.405	.112
Agility	11.84	.662	.183

It was evident from Table 5 the mean performance of Physical fitness Profile Viz, Speed, Muscular Strength and Agility of National Hockey players. It was 4.06 Sec. (SD=.497 sec.), 2.70Mt. (SD=.405 Mt.) and 11.84 Sec.(SD=.662 Sec.) respectively.

Table 6: Comparison of Physical Fitness Profile of National & State Hockey Players (n=13)

Variables	National Hockey Players	State Hockey Players	t	Sig. (2tailed)	Mean Difference
Speed	3.41	4.06	3.37	.002	.641
M. Strength	3.84	2.70	6.66	.000	1.14
Agility	10.27	11.84	1.14	.000	1.56

From Table 6 we can see the comparison of physical fitness components between National and State Hockey Players and it was found. The national players were found faster than State Hockey Players the 't' value of Speed 3.37 is significant at 0.01 level of significance. In the same way the national hockey players performed better than state hockey players in muscular Strength test, the 't' value of muscular strength 6.66 is also significant at 0.01 level of significance. The national players were also found more agile than state hockey players the 't' value of agility 1.14 is significant at 0.01 level of significance.

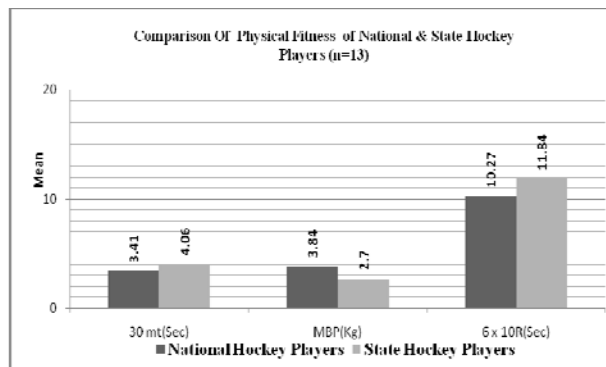


Fig 2: Comparison of Physical Fitness Profile of National & State Hockey Players (n=13)

4. Conclusion

The present study, with in limitation, warrants the following conclusion:

1. National Level female hockey players performed better in all Morphological variables (Viz. Height, Weight, Body Mass Index) than State Level female hockey players.
2. National Level female hockey players also performed better in all Physical Fitness Variables (Viz. Muscular Strength, Speed and Agility) than State Level female hockey players.

5. Recommendation & implication

After considering the differences in components of Morphological and Physical fitness of national and State level Hockey players following recommendations regarding the implication and suggestions for further studies are made:

In this study, a survey was taken only for National and State level players. Since the results are provoking, further investigation in this direction on International players seems to be valuable. The knowledge evolve from this study seems to be new in the literature of sports hostel girls of Himachal Pradesh context; in fact, this study will be directly helpful to coaches, trainees, and teachers. This contribution will enrich the overall sports and physical education and especially coaching and training.

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