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Cross-Sectional validation of physical fitness variables among hockey and football players

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Abstract

The study aimed to contrast specific physical fitness elements among female intercollegiate football and hockey players from chosen colleges affiliated with the University of Amritsar. A purposive sampling technique was utilized to select a total of (N =36) female hockey players. Subsequently, these players were categorized into two groups: Football Players (n_1 =18) and Hockey Players (n_2 =18). The subjects' ages varied from 18 to 25 years old. The research focused on specific elements of physical fitness, including speed, agility, and cardiovascular endurance. The data were recorded by different measures namely the 50-meter dash, shuttle run (4×10m), and 600-meter run as prescribed in Test Evaluation Accreditation Measurements and Standards by Kansal (2018). To determine the significance difference between hockey and football female players on selected physical fitness components the test was applied at a 0.05 level of significance. The results of the study revealed that there was a significant difference in speed and agility. Football players performed better than hockey players in speed and agility. There was no significant difference obtained in endurance.

Keywords: Speed, Agility, Endurance, Football, and Hockey players

Introduction

Fitness means the ability of an individual to live a happy and well-balanced life. It involves not only the physical but intellectual, emotional, social, and spiritual aspects of an individual. Clarke Harrison H (1979)^[1]. Interaction and interdependence of these phases of a man's health are such that any deviation from normal in any aspect of these components of fitness will make a man unable to meet the demands placed on him by his work or way of life. Physical fitness is the capability of the heart, blood vessels, lungs, and muscles to function at optimal efficiency. The physical condition is one component or aspect that is crucial to achieving success in sports. Azmi K (2018) [3]. A normal person's level of physical fitness is just as important as a person who is taking part in a sporting event. Keshav K (2014) ^[4]. Strength, endurance, power, speed, agility, balance, flexibility, and stamina are common components of physical fitness, which play a significant role in enhancing performance in games and sports. More AV (2019) ^[5]. Cardiovascular endurance is the most crucial component of overall fitness. Other names for cardiovascular endurance

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include cardio-respiratory endurance, cardiovascular fitness, aerobic capacity, and aerobic fitness. The term "endurance" is also occasionally used to refer to cardiovascular endurance. while the term "endurance" may also refer to a muscle's capacity to do repeated tasks without becoming tired. It may be described as the heart's and lungs' capacity to take in and transfer sufficient quantities of oxygen to the working muscles throughout prolonged periods for tasks requiring big muscle masses. The ability to brake quickly and effectively, change directions, and accelerate again while retaining motor control in either a vertical or horizontal motion is known as agility. D Thakur (2014)^[11]. An object's speed can be described as its rate of motion or its speed. The definition of performance is the combination of one's technique, skill level, and effort level. (Kawalek K (2013)^[20]. The significance of physical fitness for athletic performance is so clear that coaches and athletes devote the majority of sports training to promoting physical fitness. Kumar CR (2021)^[6]. Football is probably the world's most popular sport played in practically every nation at varying levels of competence (Reilly, 1995)^[7]. As we know hockey International Journal of Advance Research in Multidisciplinary

is also a popular sport as well as played in most of the countries. Both hockey and football have been considered highly competitive sports worldwide. A player is required an appropriate level of physical fitness and motor fitness to play these sports. To perform the basic skills of these sports like dribbling, shooting, juggling, passing, etc. in a precise and quick manner motor fitness is very important. Motor abilities contribute independently and interdependently to the successful performance of skill (Barrow and McGee, 1979) [8]. Conducted a study on 128 male players (64 football, 64 hockey) at the school state level to know the differences in their selected motor fitness components i.e. strength (upper body, abdominal, explosive), agility, speed, and endurance. The results of the study revealed that hockey players were significantly better than football players in abdominal strength. But the football players were significantly better in explosive strength than hockey players. No significant differences were observed in upper body strength, agility, speed, and endurance between football and hockey players. (Sen and Bhagat KR 2013)^[9]. Compared the volleyball and handball players, who participated in inter-university tournaments, on the selected physical fitness variables (endurance, agility, flexibility, and explosive strength). The final results indicated that the explosive strength was significantly higher in volleyball players than in handball players but the flexibility was significantly higher in handball players than volleyball players. There was no significant difference found in endurance and agility between volleyball and handball players. Singh (2015)^[10] explored the difference in selected physical fitness components i.e. speed, explosive leg strength, and cardiovascular endurance between intercollege level football and hockey players of Punjabi University, Patiala. The researchers concluded that football players were significantly better in speed, explosive leg strength, and cardiovascular endurance as compared to hockey players. Singh and Kumar (2018)^[16].

Objective of the study

- The research was conducted to compare the speed of female hockey and football players at the intercollegiate level.
- The research was conducted to compare the agility of female hockey and football players at the intercollegiate level.
- The research was conducted to compare the endurance of female hockey and football players at the intercollegiate level.

Materials and Methods

Selection of Subject

The study focused on examining the physical fitness components of female intercollegiate football and hockey players from selected colleges associated with the Guru Nanak Dev University of Amritsar, Punjab. A purposive sampling method was to choose a total of female hockey players (N = 36). These players were then divided into two groups: Football Players (n1 = 18) and Hockey Players (n2 = 18). The participants' ages ranged from 18 to 25 years.

Selection of variable and tools

Table 1: Test and criterion measures for the selected variables.

Physical Fitness Variables								
S. No.	Variables	Test/Tools Administered	Unit of measurement					
1.	Speed	50meters dash	Seconds					
2.	Agility	Shuttle run	Seconds					
3.	Endurance	6 Minutes Run / Walk	Meters					

Statistical techniques used

The 't' test was used at the 0.05 level of significance to determine the significance difference between male intercollegiate hockey and football female players on physical fitness variables, including speed, agility, and cardiovascular endurance.

Table 2: Statistical techniques used

Variables	No. of Subject	Group	Mean	SD	't'	Sig. (2 tailed)
Speed	20	Hockey	8.0890	0.80112	2.561	.019
	20	Football	7.9235	0.70072		
Agility	20	Hockey	12.6225	3.12321	3.889	.001
	20	Football	11.4830	2.75380		
En dunan aa	20	Hockey	532.00	8.99122	2 0 2 5	.056
Endurance	20	Football	546.00	11.00879	2.055	

Speed

The average and standard deviation for speed among female hockey players were 8.0890 and 0.80112, respectively. On the other hand, female football players had average and standard deviation values of 7.9235 and 0.70072, respectively. The t-value of 2.561, displayed in Table 1 above, was determined to be statistically significant when comparing the mean speeds of the two groups. It was noted that football players exhibited better speed than hockey players in both groups.

Agility

The average and standard deviation for agility among female hockey players were 12.6225 and 3.12321, respectively. On the other hand, female football players had average and standard deviation values of 11.4830 and 2.75380, respectively. The t-value of 3.889, displayed in Table 1, indicated statistical significance. Upon comparing the mean values of both groups, it was noted that football players exhibited superior agility compared to hockey players.

Endurance

Female hockey players' mean and standard deviation on the variable endurance were 532.00 and 8.99122 respectively. Female football players' mean and standard deviation were 546.00 and 11.00879 respectively. Table 1 indicates that the t-value of 2.035 was deemed statistically insignificant; however, while comparing the mean values of the two groups, it was noted that football players outperformed hockey players, as seen in Figure 2.

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Fig 1: Shows the comparison of mean score of speed between hockey and football Female player.



Fig 2: Shows the comparison of the mean score of Agility between hockey and football Female player.



Fig 3: Shows the comparison of the mean score of endurance between hockey and football Female player.

Discussion of the findings

The study's conclusions unequivocally demonstrated a statistically significant speed differential between female football and hockey players. The female football players were faster than the female hockey players. This finding is supported by Panday and Sardar (2015) ^[13], Pawar (2016) ^[14], Ajay Ghosh (2017) ^[15] and Singh and Kumar (2018) ^[16] in their studies. Compared to female hockey players, football players had much greater agility. This finding is supported by the studies of Muralirajan and Sudarsan (2015) ^[17], Singh and Kaur (2016) ^[18], and Ajay Ghosh (2017) ^[15]. Football is an extremely fast-paced, violent game. Football players utilize their lower body muscles more for passing and kicking the ball than hockey players. These might be the causes of the football players' increased quickness and agility. There are no appreciable variations in endurance between female football and hockey players. The finding on endurance is supported by the study of Sen and Bhagat (2013) [9].

Conclusions

- A statistically significant difference was observed in speed and agility between hockey and football female players of intercollegiate level. Football players performed better than hockey players in speed and agility.
- A statistically insignificant difference was observed in endurance. But football players performed slightly better than hockey players in endurance.

References

- 1. Clarke HH. Definition of physical fitness. Journal of Physical Education and Recreation. 1979;50(8):28.
- 2. Clarke HH. Circulatory respiratory endurance. Physical Fitness Newsletter. 1974;XXI(3):2.
- Azmi K, Kusnanik NW. Effect of exercise program speed, agility, and quickness (SAQ) in improving speed, agility, and acceleration. Journal of Physics: Conference Series. 2018;947(1):1-5.
- Keshav K, Harmandeep S. A comparative study of physical fitness variables of male volleyball players and football players. Research Journal of Physical Education Sciences. 2014;2(1):5-7.
- 5. More AV. Comparative study of flexibility, agility, explosive strength, and BMI of basketball and handball players. International Journal of Physiology, Nutrition, and Physical Education. 2019;4(1):21-23.
- Kumar CR. A comparative study of speed among basketball and handball players of Khammam District in Telangana State. International Research Journal of Education and Technology. 2021;3(2):35-39.
- Reilly T. Science and Soccer. London, England: Taylor & Francis; c1995.
- Barrow HM, McGee R. A Practical Approach to Measurement in Physical Education. Philadelphia, PA: Lea & Febiger; c1979.
- Sen S, Bhagat KR. Comparative study of motor fitness of school state-level hockey and football players of Himachal Pradesh. International Journal of Physical Education, Sports and Yogic Sciences. 2013;2(3):24-25.
- 10. Singh H. Comparative study on selected physical

fitness and physiological variables between volleyball and handball players. European Journal of Physical Education and Sport. 2015;10(4):206-211.

- 11. Thakur D, Motimath B. Flexibility and agility among children and adolescent athletes: An observational study. International Journal of Physiotherapy and Research. 2014;2(4):653-656.
- Kawalek K, Ogurkowska M. A comparison of selected biomechanical parameters in speed-endurance athletes. Trends in Sport Sciences. 2014;21(2):85–91. Available from:

http://yadda.icm.edu.pl/yadda/element/bwmeta1.elemen t.agro-ca125697-4e7b-4651-a01a-f1580099f509.

- 13. Pandey AK, Sardar S. A study of speed ability among football and hockey male players of Bilaspur, Chhattisgarh. International Journal of Applied Research. 2015;1(11):694-696.
- 14. Pawar VS. A study of speed ability among football and hockey male players of Pune, Maharashtra. International Journal of Physical Education, Sports and Health. 2016;3(6):325-326.
- 15. Ajay Ghosh MV. Comparative study of selected physical fitness variables among male football and hockey players. International Journal of Physiology, Nutrition, and Physical Education. 2017;2(2):792-794.
- 16. Singh K, Kumar R. Comparative study of selected physical fitness components between hockey and soccer players at the university level. International Journal of Academic Research and Development. 2018;3(2):345-347.
- Muralirajan K, Sudarsan SS. Comparison of selected motor fitness components among different match practice teams. Paripex Indian Journal of Research. 2015;4(10):42-44.
- Singh TN, Kaur H. Agility status among national-level male football, basketball, and hockey players. International Journal of Yoga, Physiotherapy, and Physical Education. 2016;1(1):26-27.
- 19. Thakur D, Motimath B. Flexibility and agility among children and adolescent athletes: An observational study. International Journal of Physiotherapy and Research. 2014;2(4):653-656.
- Kawalek K, Garsztka T. An analysis of muscle balance in professional field hockey players. Trends in Sport Sciences. 2013;4(20):181-187.

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