

Comparative Analysis of Selected Physical Fitness Variables Between Hockey and Football Players (University of the Punjab, Lahore)

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Abstract

The present study was designed to compare the analysis of selected physical fitness variables between female hockey and football players at the University of the Punjab, Lahore. The physical fitness variables were cardiovascular endurance, agility, speed, and explosive strength. The study's sample size was twenty-eight, of which fourteen were hockey, and fourteen were football athletes. The data were collected from both groups and statistically analyzed using one sample "t" test in the SPSS 20.0 version. The mean values of the speed of hockey and football players were 50.550 and 49.864, respectively. The mean values of the explosive strength of hockey and football players were 1.627 and 1.643, respectively. The mean values of endurance of both hockey and football were 1.801 and 1.835, respectively. The mean values of agility of both hockey and football players were 1.811 and 1.844, respectively. As a statistical result, the ability to improve difference, e.g., speed, strength, and cardiovascular endurance, was better in football players, while the improvement in agility was found in hockey. The results of this study support that regular training along with fitness workouts can significantly impact an athlete's physical fitness.

Keywords: Physical Fitness, Hockey, Football Players.

Introduction

In the era of the modern sports industry, the statistics closely related to exercise performance, health, and training effectively help athletes in daily training and developing game strategies and are becoming an indispensable means for winning competitions (Liu et al., 2020).

The actual wellness of any competitive sports depends upon active fitness. The fitness variables of both comparative sports are likely similar, but their demand is different according to their requirement. Competitive-level sports training requires a variety of fitness levels as well as planning, rehabilitation, popularity, and financial support. They have similar provisions in which the researcher compares the fitness level of both teams, which have cardiovascular endurance, agility, speed, and strength. Various activities have different importance at different levels.

Even with a systematic fitness level and careful preparation for targeted achievement, reaching the peak of sports achievement is attainable. Physical fitness is an essential quality in man. Recent

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research has highlighted that active fitness is important in competitive sports. An athlete who has a sound fitness level is superior and tends to be well adjusted in competition, while an athlete who has a weak fitness level tends to be inferior and may be at risk of any injury.

The philosophy states, everyone should be actively fit to enjoy a healthy life fully and freely (Greenberg et al., 2004). Fit athletes have energetic bodies for intellectual as well as vigorous work, sound lungs, and hearts, good digestive systems and well-developed shapes, which are all great assets for living a happy and satisfying life (Petrzela, 2022). A physically fit individual is psychologically healthy, emotionally stable, and socially well-adjusted (Tangney et al., 2018). The recent progressions in scientific sports with the help of technology have resulted in innovations and inventions that have influenced human performance in various ways (Ratten, 2019). This means that modern fitness conditions lead to a peak performance.

However, hockey typically emphasizes quick bursts of intense effort, requiring players to have strong anaerobic capabilities and agility for rapid direction changes. On the other hand, football involves more sustained running, requiring a balance of aerobic endurance and strength, especially for positions like midfielders and forwards. In terms of strength, both sports require muscular power, but the specific muscle groups and types of strength needed may vary. Hockey players often require strong lower body muscles for skating, while football players may focus on upper body strength for ball control and physical challenges. Ultimately, the comparative analysis depends on specific positions and playing styles within each sport and individual athlete characteristics. Training programs should be tailored to the unique demands of each sport to optimize performance. In the above statement, the comparative study seeks to compare the relationship between physical fitness levels of university athletes. The main aim of this study is to find out the mean difference in speed, explosive strength, agility, and cardiovascular endurance in hockey and football athletes.

Method of the Study

The methodology section refers to the method of study. The following steps were taken to reach certain findings and conclusions regarding the comparative analysis of physical fitness variables between female hockey and football players of the University of the Punjab, Lahore.

Sample of the Study

In research terms, a sample refers to a group of people, objects, or organizations taken from a larger population for measurement. The sample should be representative of the population to ensure that we can generalize the findings from the research sample to the population as a whole (Okoli & Pawlowski, 2004). To achieve the purpose of the study, the researcher conveniently selected the participants from both teams, and there were twenty-eight players, fourteen from Hockey and fourteen from football as a subject.

Research Instrument

As the study was experimental by nature and for the assessment, the researcher used the physical fitness variables such as cardiovascular endurance, agility and speed, and strength as a criterion.

Validity and Reliability

The standardized tests assessed the fitness variables. A cooper run test evaluated cardiovascular endurance; the shuttle run test speed set agility; a standing broad jump test assessed a 300-yard shuttle test, explosive strength, and the P value was ($P < 0.05$).

Data Analysis Technique

After conducting the comparison test, the collected data was statistically analyzed through SPSS 22.0.

Analysis of the Study

Table 1: Descriptive statistics for the data on speed of hockey and football players

One-Sample Statistics				
Testing Variables	N	Mean	Std. Deviation	Std. Error Mean
Hockey (Speed)	14	50.5500	2.43997	.65211
Football (Speed)	14	49.8643	1.78352	.47667

Table 1 show that the mean value and standard deviation of speed of both hockey and football players. It showed that the mean values of level achieved of the hockey and football players were 50.550 and 49.864 respectively. It was concluded that there was a significant difference occurred in total distance covered between both teams and the mean of the football players < than hockey players which indicated that footballers are faster than hockey players.

Table 2: Descriptive statistics for the data on strength of hockey and football players

One-Sample Statistics				
Testing Variables	N	Mean	Std. Deviation	Std. Error Mean
Hockey (Strength)	14	1.6279	.06670	.01783
Football (Strength)	14	1.6443	.05721	.01529

Table 2 show that the mean value and standard deviation of strength of both hockey and football players. It showed that the mean values of level achieved of the hockey and football players were 1.627 and 1.643 respectively. It was concluded that there was a significant difference between both teams and the mean of the football players < than hockey players which indicated that footballers have more strength than hockey athletes.

Table 3: Descriptive statistics for the data on endurance of hockey and football players

One-Sample Statistics				
Testing Variables	N	Mean	Std. Deviation	Std. Error Mean
Hockey (Endurance)	14	1.8017	38.70486	10.34431
Football (Endurance)	14	1.8351	48.08943	12.85244

Table 3 show that the mean value and standard deviation of endurance of both hockey and football players. It showed that the mean values of level achieved of the hockey and football players were 1.801 and 1.835 respectively. It was concluded that there was a significant difference between both teams and the mean of the football players is > than hockey players which indicated that Footballers have sound endurance.

Table 4: Descriptive statistics for the data on agility of hockey and football players

One-Sample Statistics				
Testing Variables	N	Mean	Std. Deviation	Std. Error Mean
Hockey Agility	14	18.1143	.73574	.19664
Football Agility	14	18.4479	.68143	.18212

Table 4 shows the mean value and standard deviation of agility of both hockey and football players. It showed that the mean values of the level achieved by the hockey and football players were 1.811 and 1.844, respectively. It was concluded that there was a significant difference between both teams, and the mean of the football players is > than that of the hockey players, indicating that hockey athletes have sound agility fitness.

Discussion

The ability to increase speed was observed in football players, and the study's findings connected with relevant findings that regular speed training significantly correlates with speed performance. (Firth et al., 2017). The study found an increase in strength in football players, which is linked with previous findings that resistance exercise can positively impact strength and muscle mass (Fragala et al., 2019). The study showed that footballers have more cardiovascular endurance due to prolonged activity. The study's findings linked with other findings that participation in endurance activity positively correlates with regular cardiovascular activities and exercise, which helped improve endurance levels (Kenney et al., 2021). The improvement in hockey players on the agility variable and observed the hockey athletes have worked more on quickness. The study's findings connected with other findings and endorsed a positive correlation between agility training, which helps improve agility (Sheppard et al., 2006).

Conclusion

The study results revealed that there were significant differences ($P < 0.05$) in physical fitness variables between hockey and football players. Specifically, cardiovascular endurance findings linked aerobic endurance to a leading aspect needed in every endurance sport, including hockey and football (Prathap et al., 2021). Speed is another factor, while several studies indicated that fast twitch muscles have more sprint, which needs regular exercise, a healthy heart rate, environment, and genetics for possession effect of muscle fiber (Baumert, 2019). As a result of the comparison of strength capacity, field hockey, football, and other explosive activities with repeated back-to-back sprints, the completion and training sessions need strong muscles (Manna et al., 2015). The findings of the agility seem with other findings that agility is an important bio-motor part in football and hockey, and the movement in both activities is performed in a fast way and in short therefore, agility is more required to keep and maintain ball possession from an opponent in training and completion (Young et al., 2014). The results of this study support that regular training along with fitness workouts can significantly impact an athlete's physical fitness.

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