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Comparing Recovery Capacities in Football and Basketball Players

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Abstract

Background: Recovery is a mental health service topic, and it's essential to give a person's body enough time spent not training to replenish energy stores and allow damaged muscles to recover. The time between the finish of an exercise session and the subsequent return to a resting or recovered state is referred to as recovery from exercise. The present study aims to provide knowledge and indicate better recovery time among football and basketball players.

Methodology: Eighty male football and basketball players were randomly selected as the subjects in the present study. Among them, forty were football players, and forty were basketball players. The mean age of football players is 22.23, and basketball players are 20.20 years. In the present study, the mean BMI of football players was 21.50, and for basketball players, it was 22.96. Recovery capacity was measured using the Harvard step test by collecting the pulse rate. The collected data was analyzed using descriptive statistics, mean, median, and standard deviation. The significance level was set at $p<0.05$. Descriptive and appropriate inferential statistical tools like SPSS have been used to analyze gathered data. The present study showed a statistically significant ($p=.000$) difference between Football and Basketball players.

Results: Basketball players (M= 89.00) had better recovery time than Football players (M=84.50).

Conclusion: Concerning the norms, the recovery scores of Basketball players are in the high range of sound and explore the higher recovery capacity of Basketball players than other two ball game players.

Keywords: Recovery Time, Harvard step test, Pulse rate, Football Players, Basketball players.

Introduction

Physical exercise can help to improve healthy living **[1]**. People today place a greater emphasis on their physical and mental well-being in hopes of improving performance standards. The relationship between the central nervous system and the muscles is defined as "motor fitness," sometimes referred to as "skill-related fitness." **[2]**. Physical fitness is often regarded as motor fitness, which is necessary for performing any movement activity **[3]**. Motor Fitness, according to Barrow (1968), is "a readiness or preparedness with special regard for big muscle activity without undue fatigue" **[4-5]**.

Recovery is a contentious issue among researchers today, with some claiming that people can recover, others suggesting that people can improve, and still others claiming that people can never recover and are persistently mentally ill **[6]**. Heart rate recovery (HRR) is defined as the difference between peak HR during exercise and exactly 1 min or 2 min into the recovery period after exercise and an HRR value less than 12 beats/min or less than 22 beats/min at 1 and 2 min into the recovery period respectively was found abnormal **[7]**. Athletes can return to their normal physiological and psychological state as soon as possible after training and competition through recovery. Various techniques are employed by athletes so that performance in their next competition or training session will not be unduly compromised by muscle soreness and fatigue.

Post-exercise recovery is a significant factor in training in games and sports to enhance the adaptation cycle **[8]**. Recovery is a crucial component of any training regimen, but it's essential for athletes because it gives the body time to adjust to its workload, reduces stress, improves performance, restores muscle glycogen, and allows body tissue to rebuild **[9]**. Although performance depends on the ideal balance between training and rehabilitation, high-intensity exercise consumes much energy and generates post-workout weariness that affects performance **[10]**.

There are two common types of recovery: Active recovery and Passive recovery. Active recovery means staying physically active, and passive recovery means resting to allow muscles time to repair themselves **[11]**. Another type of recovery is "training recovery," which is the recovery between successive workouts or competitions **[12]**.

Exercise leads to dehydration, fatigue, increased body temperature, depletion of muscle glycogen, and soft tissue damage. A post-workout recovery plan actively relieves stress, refueling muscle

glycogen, and provides the body's tissue healing time **[9]**. A healthy lifestyle can be improved through exercise **[10]**. It has been observed that rapid changes in heart function take place during the immediate recovery post–exercise **[13]**.

Soccer is challenging, and success depends on various factors, including physical prowess and technical ability **[14]**. Research on recreational football has proven that training-induced increases in aerobic and cardiovascular fitness performance have become clinically sound **[15-16]**. Small-sided matches of amateur football played weekly have been suggested as an alternate workout method for enhancing cardiovascular fitness regardless of age, sex, or health status **[16]**.

Basketball is one of the most popular sports in the world, and the National Basketball Association (NBA) is the premier professional basketball league in the United States **[17]**. Basketball is a high-intensity intermittent court-based team sport that, depending on the level of play, lasts 32–48 minutes and requires quick changes in movement patterns, accelerations, and decelerations **[18-19]**. Basketball game shot consistency and accuracy are directly tied to the number of points a team basket **[20]**. Basketball players must overcome many obstacles to recover during the season **[21]**. The metabolic pathways for both anaerobic and aerobic metabolism contribute to the energy required of players on the court **[18]**.

Recovery has become a vital part of both football and basketball players. After engaging in various forms of activity, football and basketball players experience physical and mental exhaustion, dehydration, soft tissue damage, muscle glycogen depletion, and increased body temperature. Recovery aids in helping them regain their physical and psychological vigor. Recovery aids in training adaptation and injury prevention. With enough recovery, it is practically possible to maintain performance. The present study aims to compare football and basketball players' recovery times. The analysis also discusses methods to increase recovery times.

Materials And Methods

Eighty (80) male football and basketball players were randomly selected as the subjects in the present study, and their ages were **[17-23]** years. Among them, forty (40) were footballers, and forty (40) were basketball players. All players were competing at inter-university and junior national levels in their prestigious sporting competitions in Bangladesh. Most of them study at Jashore University of Science and Technology, and their training ages are six to ten years. A step or Platform of 20 inches (50.8 cm) high, a Stopwatch, Metronome or cadence tape, Stele Tape, a Digital Weighing Scale (RFL CODE:868814), Paper, and a pen were used to collect data for the present research. Recovery capacity was measured using the Harvard step test by collecting the pulse rate.

The data was collected using the standard procedure of the Harvard Step Test. The data were distributed less normally when scanned using the Kolmogorov-Smirnov and Shapiro-Wilks tests. They have used those non-parametric analyses. The data was examined using descriptive statistics, a median, and a standard deviation (SD). The significance level was set at $p<0.05$. For the study the acquired data on the recovery phenomena of Football and Basketball players, descriptive and suitable inferential Kruskal-Wallis statistics were utilized in SPSS.

Results

Table 1: Test of Normality, Kolmogorov-Smirnov, and Shapiro-Wilk among three event players

	Group	**Test of Normality**				
		Kolmogorov-Smirnov (*p*)	**Shapiro-Wilk (*p*)**	**Descriptive**		
					Statistic	**Std. Error**
Score	**Football**	**.004**	**.000**	**skewness**	**-2.194**	**.374**
				kurtosis	**7.698**	**.733**
	Basketball	**.017**	**.075**	**skewness**	**-.119**	**.374**
				kurtosis	**-.953**	**.733**

In Table number 1, a Kolmogorov-Smirnov and Shapiro-Wilks test ($p>.05$) (Shapiro & Wilk, 1965; Razali & Wah, 2011) and a visual assessment of their histograms, standard Q-Q plots, and box plots indicated that the exam scores were nearly not normally distributed for all the samples, with skewness of -2.194 (SE = .374) and kurtosis of 7.698 (SE = .733) for the Football Players and skewness of -.119 (SE = .374) and kurtosis of -.953 (SE = .733) for the Basketball players (Cramer,1998; Cramer & Howitt, 2004; Doane & Seward, 2011). The entire data set has been normalized using a non-parametric rank order one-way analysis of the "Kruskal-Wallis" test version. The homogeneity of variance in the samples was confirmed by Levene's test ($p>.05$) (Martin& Bridgmon 2012).

Table 2: Mean, Median, and Standard Deviation of all criterion measure.

Event	Age			BMI			Resting Heart Rate			Harvard Step Test Time			Score		
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD
Football	22.23	22.50	2.02	21.50	21.55	1.47	70.98	70.00	2.07	282.75	300.00	31.07	82.03	84.50	9.03
Basketball	20.20	21.00	3.44	22.96	23.00	1.07	70.03	70.00	.58	284.65	301.02	29.95	87.95	89.00	4.40

**Harvard Step test is constant when group Basketball, it has been omitted.

Table 3: Kruskal-Wallis Test of score all event players.

Test	Significant	Decision
Independent samples Kruskal-Wallis Test	.000	Reject the null hypothesis

*Asymptotic significance (2-sided tests) is displayed. The significance level is .05.

Table- 4: Pairwise Group Comparisons Test of all events players

		Pairwise Comparisons of Group
		Significant
Score	**Football-Basketball**	**.003**

It is clearly shown from Table number 2 that the mean age of Football players is 22.23 med= 22.50 and the standard deviation 2.02; the mean age of Basketball players 20.20 med= 21.00 and standard deviation 3.44; mean BMI of Football players 21.50 med= 21.55 and standard deviation 1.47; mean BMI of Basketball players 22.96 med= 23.00 and standard deviation 1.07; mean Resting heart rate of Football players 70.98 med= 70.00 and standard deviation 2.07; mean Resting heart rate of Basketball players 70.03 med= 70.00 and standard deviation .58; mean Harvard Step Test time of Football players 282.75 med= 300.00 and standard deviation 31.07; mean Harvard Step Test time of Basketball players 284.65 med= 301.02 and standard deviation 29.95; mean score of Football players 82.03 median 84.50 and standard deviation 9.03; mean score of Basketball players 87.95 median 89.00 and standard deviation 4.40.

It is evident from Table number 3 that there is a statistically significant difference between football and basketball players, with a Kruskal-Wallis H test result of p=.000.

Table 4 shows pairwise comparisons of group football and basketball, with statistically significant (*p*=.000) differences.

Discussion

Undoubtedly, physically fit people are better able to handle extreme and unusual stress and strain than those who are less physically healthy **[22]**. Both basketball and football games require high levels of physical, technical, and tactical skill. Football players have higher motor skills than basketball players, such as agility and speed **[23]**.

Our present study indicates recovery phenomena between Football and Basketball players. In this study, only forty (40) football players and forty (40) basketball players were selected as the subject of various Bangladesh divisions. In the present study, the Kruskal-Wallis test calculates the recovery phenomena between Football and Basketball players measured by the Harvard Step Test. This test reveals a statistically significant difference between Football and Basketball players. Compared to the norms, basketball players' recovery scores are in the upper range of excellent (89.00), highlighting their more significant potential for recovery than football players. Basketball players had significantly higher body fat levels, upper body endurance, grip strength, running speed, explosive power, jumping power, balance, and coordination than football players. However, footballers had greater upper body strength, flexibility, reaction time, and agility than basketball players **[24]**. Finally, our findings confirm that basketball players have better recovery rates than football players. Although the metabolic demands of football and basketball games differ, the maximal oxygen consumption did not significantly differ **[25]**. Fitness characteristics differed between basketball and football players, and heart rates during recovery time in football players were considerably lower than the Basketball players, indicating a preferable adaptation of the cardiovascular system **[24-26]**. The results of the current study are consistent with the earlier findings in this situation. The present study advises football players to shorten recovery times to perform well in any competition. Football players are more concentrated on recovery phenomena, and Basketball players must constantly be in their recovery condition in the future. The investigation was constrained by the low quality of the equipment to gather the data and by time and financial constraints.

The results would be helpful to information for prospective studies in the area.

Conclusion

This study aims to compare the recovery processes between football and basketball players. According to the current study test results, football and basketball players differ statistically significantly from one another. Basketball players' recovery scores fall into the high range of excellent (89.00), demonstrating their more significant potential for recovery than Football players. Our findings also support that basketball players recover more quickly than football players.

None

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Authors Contributions: MRI and FTJM collected the data. JFR conceived the design research and critically reviewed the article. MYA calculation and write the report.

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