

ANAEROBIC PERFORMANCE AMONG STATE LEVEL SOCCER AND BASKETBALL PLAYERS: A COMPARITIVE STUDY



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Abstract:

The purpose of the study was to compare the Anaerobic Performance among state level Soccer and Basketball players. For the purpose of the study a total of 40 state level Soccer and Basketball Players from Manipur State (20 in each group) were randomly selected for the Anaerobic Performance test with age ranging from 21-28 years of age. The following parameters were selected for the purpose of the study: maximum power, minimum power, average power and fatigue index were selected for Anaerobic Power Test. The data was collected through the administration of Running-based Anaerobic Sprint Test (RAST) developed by Draper and Whyte (1997) to test an anaerobic performance. Before the onset of any test personal data viz, name, age and weight etc were recorded in the individual score sheet. For describing and assessing the selected parameters, the following tools i.e. For describing and assessing the selected parameters, the following tools i.e. 200 meter track, Two Cones, Two Stopwatches and Two Assistants were used. To find out the significant difference between state level Soccer and Basketball players of Manipur State descriptive statistics and independent T-test was used and level of significance was set at 0.05. The results of the study reveals that there were no any significant difference in the mean of all the parameters among state level Soccer and Basketball players of Manipur State.

Keywords: Anaerobic Performance, Maximum Power, Minimum Power, Average Power & Fatigue Index.

Introduction:

Anaerobic exercise can strengthen your bones, decreasing your risk of osteoporosis. It can also improve the strength of your tendons and ligaments while also improving joint function. It can reduce the risk of potential injuries and improve your cardiac function. Lastly, anaerobic exercise can elevate your levels of good cholesterol (HDL). Again, these benefits are obtained in combination with a healthy diet, and results vary by individual.

During anaerobic (without oxygen) work, involving maximum effort, the body is working so hard that the demands for oxygen and fuel exceed the rate of supply and the muscles have to rely on the stored reserves of fuel. The muscles, being starved of oxygen, take the body into a state known as oxygen debt and lactic starts to accumulate in the muscles. This point is

known as the lactic threshold or anaerobic threshold or onset of blood lactate accumulation (OBLA). Activity will not be resumed until the lactic acid is removed and the oxygen debt repaid.

The body can resume limited activity after a small proportion of the oxygen debt has been repaid. Since lactic acid is produced, the correct term for this pathway is lactic anaerobic energy pathway.

Cardiovascular endurance is the most important aspect of fitness. It is basically how strong an individual heart is, which can potentially add years to the life. The heart is the most important muscle in the human body and healthy heart can avoid numerous health problems. Another reason that cardiovascular endurance is important is because a heart controls the oxygen flow to all muscles - meaning cardiovascular health has a direct impact on your performance, both endurance and strength wise.

Methodology:

Subject:

For the purpose of the study a total of forty (N=40) state level Soccer and Basketball players from Manipur (20 in each group) were randomly selected for the anaerobic performance and the age ranging from 22 to 27 years.

Selection of Parameters:

The following parameters were selected for the purpose of the study:

- Maximum power - the highest value
- Minimum power - the lowest value
- Average power - sum of all six values \div 6
- Fatigue Index - (Maximum power - Minimum power) \div Total time for the 6 sprints

Administration of Test:

Running-based Anaerobic Sprint Test (RAST) developed by Draper and Whyte (1997) was administered to test an anaerobic performance of an athlete. The RAST test requires the athlete to undertake six time 35 metre sprints with 10 seconds recovery between each sprint. Researcher records the athlete's weight. The athlete was instructed to warm up for 10 minutes. The researcher mark out a 35 metre straight on the track with the cones. The athlete completes six time 35 metre runs at maximum pace with 10 seconds.

Power = Weight \times Distance² \div Time³

Collection of Data:

The data was collected through the administration of Running-based Anaerobic Sprint Test (RAST) developed by Draper and Whyte (1997) to test an anaerobic performance of an athlete where running is the primary method of movement.

Tools for Data Collection:

For describing and assessing the selected parameters, the following tools i.e. 400 meter track, Two Cones, Two Stopwatches and Two Assistants.

Statistical Analysis:

To analysis of the collected data the following statistical procedure were used. Descriptive statistics mean and standard deviation were adopted, and for testing the significant difference between means independent t-test were adopted for the purpose of the study and the level of significant was set at 0.05.

Results:

The mean and standard deviation of personal data of the Soccer and Basketball have been presented in Table No- I. T-test for the performances of Anaerobic Performance among state level Soccer and Basketball were presented.

Table No-I
Descriptive Statistics of Maximum Power among Male Soccer and Basketball Players

Event	N	Mean	S.D	Standard Error.	Tab
Soccer	20	939.39	45.28	10.12	le 1
Basketball	20	846.84	84.9	19.04	rev

the description analysis in terms of mean and standard deviation on maximum power among male Soccer and Basketball players of Manipur State. Mean difference of Soccer and Basketball players was (939.39, 846.84) & Standard deviation of Soccer and Basketball players in maximum power was ($\pm 45.28 \pm 84.9$), respectively.

Figure-I

Graphical Representation of Mean difference among Male Soccer and Basketball Players

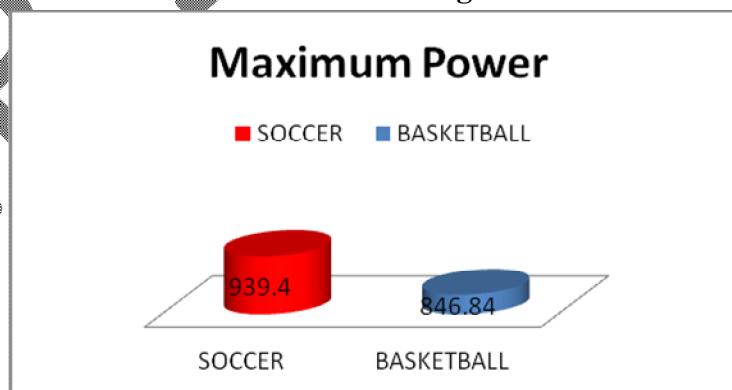


Fig-1 reveals the mean difference of maximum power among Soccer and Basketball players. It was observed from the figure that the mean differences between two groups were 92.55. The Soccer Group had high level of maximum power than the Basketball group.

Table No-II
Descriptive Statistics of Minimum Power among Male Soccer and Basketball Players

Event	N	Mean	S.D	Standard Error.	Table II reveals
Soccer	20	466.63	79.40	17.75	
Basketball	20	463.64	59.80	13.37	

the description analysis in terms of mean and standard deviation on minimum power among male Soccer and Basketball players of Manipur State. Mean difference of Soccer and Basketball players was (466.63, 463.64) & Standard deviation of Soccer and Basketball players in minimum power was ($\pm 79.40 \pm 59.80$), respectively.

Figure -II Graphical representation of Mean difference among Male Soccer and Basketball Players

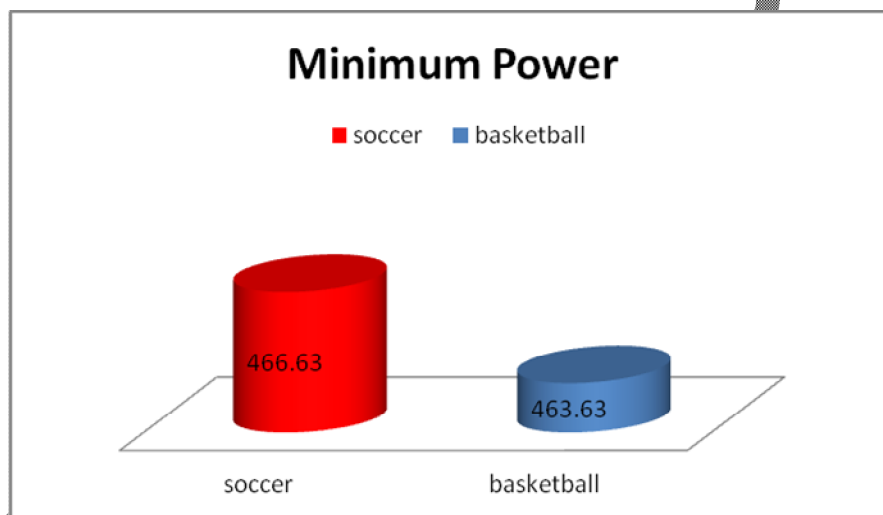


Fig.-II reveals the mean difference of minimum power among Soccer and Basketball players. It was observed from the figure that the mean differences between two groups were 2.99. The Soccer Group had high level of minimum power than the Basketball group.

Table No-III
Descriptive Statistics of Average Power among Male Soccer and Basketball Players

Event	N	Mean	S.D	Standard Error.	Table III reveals
Soccer	20	668.35	87.80	19.63	
Basketball	20	572.59	64.16	14.34	

the description analysis in terms of mean and standard deviation on average power among male Soccer and Basketball players of Manipur State. Mean difference of Soccer and Basketball

players was (668.35, 572.59) & Standard deviation of Soccer and Basketball players in average power was ($\pm 87.80 \pm 64.16$), respectively.

Figure-III Graphical representation of Mean difference among Male Soccer and Basketball Players

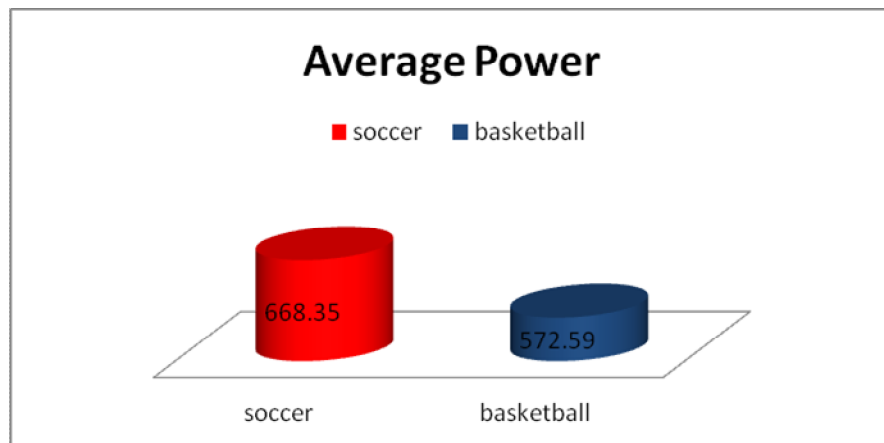


Fig-III reveals the mean difference of minimum power among Soccer and Basketball players. It was observed from the figure that the mean differences between two groups were 95.76. The Soccer Group had high level of average power than the Basketball group.

Table No-IV

Descriptive Statistics of Fatigue Index among Male Soccer and Basketball Players

Event	N	Mean	S.D	Standard Error.
Soccer	20	16.02	1.22	0.27
Basketball	20	15.88	0.67	0.15

Table IV reveals the description analysis in terms of mean and standard deviation on Fatigue Index among male Soccer and Basketball players of Manipur State. Mean difference of Soccer and Basketball players was (16.02, 15.88) & Standard deviation of Soccer and Basketball players in fatigue index power was ($\pm 1.22 \pm 0.67$), respectively.

Figure-IV Graphical representation of Mean difference among Male Soccer and Basketball Players

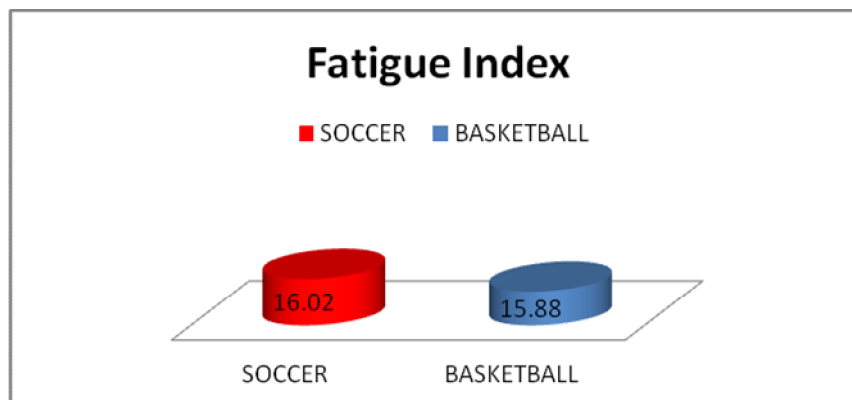


Fig-IV reveals the mean difference of Fatigue Index among Soccer and Basketball players. It was observed from the figure that the mean differences between two groups were 0.14. The Soccer Group had high level of Fatigue Index than the Basketball group.

Table No-V

Independent-t test table for significant difference among Soccer and Basketball Groups

Parameters	Groups	Mean	Mean Difference	T-Value
Maximum Power	Soccer	9.333	92.55	0.0001
	Basketball	7.283		
Minimum Power	Soccer	466.63	2.99	0.89
	Basketball	463.63		
Average Power	Soccer	668.35	95.76	0.0003
	Basketball	572.59		
Fatigue Index	Soccer	16.02	0.14	0.64
	Basketball	15.88		

*Significant at 0.05 levels

Table-V, reveals the mean difference maximum power among soccer and basketball groups were 939.40 and 846.84 respectively and the difference between two means were 92.55.

The calculated t-value was 0.0001 which was less than table value. So in terms of maximum power there was no significance difference between soccer and Basketball groups at 0.5 level of confidence.

In Minimum Power the Mean of Soccer and Basketball groups were 466.63 and 463.64 respectively and the difference between two means were 2.99. The calculated t-value was 0.89 which was much less than the table value. So in terms of minimum power there was a no significance difference between Soccer and Gymnastic groups at 0.5 level of confidence.

In Average Power the Mean of Soccer and Basketball groups were 668.35 and 572.59 respectively and the difference between two means were 95.76. The calculated t-value was 0.0003 which was much less than the table value. So in terms of average power there was a no significance difference between soccer and basketball groups at 0.5 level of confidence.

On the other hand in Fatigue Index, the mean of Soccer and Basketball groups were 16.02 and 15.88 respectively and the difference between two means was 0.14. The calculated t-value was 0.64 which was much less than the table value. So in terms of Fatigue Index there was a no significance difference between soccer and basketball groups at 0.5 level of confidence.

Discussion:

Based on the literature gone through research findings and scholar's understanding of the subject area the following results were found.

There was no significant difference in the mean of all the parameters among Soccer and Basketball statistically. The researcher observes that the maximum power of soccer player groups is better than the Basketball group as soccer player having high maximum power output and it indicates that the soccer player's possessed higher strength and maximal sprint speed than the basketball players. As the matter of fact the soccer players is having a good maximal strength and higher strength endurance in lower extremity muscles.

The researcher also detects that minimum power of Soccer group and Basketball player was found insignificant difference statistically but Soccer player having high mean then the basketball group. It indicates that basketball player having the lowest power output achieved which mean basketball player having more minimum power than the soccer group and it also indicate that the basketball player have a little ability to maintain anaerobic performance and soccer player need to develop the lactate tolerance.

In Average Power the researcher found insignificant difference among soccer and basketball players. The Soccer group having little better than Basketball group as Soccer group posses 95.76 more mean than basketball group and also it indicates the soccer player have a little ability to maintain anaerobic performance over time than Basketball group.

On the other hand, in Fatigue Index also there was no significant difference found. But Basketball player having little ability to maintain anaerobic performance and soccer player need to develop the lactate tolerance. The reason of that may be due to high intensity of game

soccer have a high fatigue level than the basketball but to analyze the parameter, lower the value the higher the ability for the athlete to maintain anaerobic performance. With a high fatigue index value the athlete may need to focus on improving their lactate tolerance.

The current study was initially based on a strong theoretical foundation by S.P. Reidy, S.R. Kerr and J.A. Nelson (2000) on his study of “Aerobic and anaerobic swimming performance of individual Atlantic cod”. Sporis, Goran; Ruzic, Lana; Leko, Goran (2008) A studies of “The Anaerobic Endurance of Elite Soccer Players Improved after a High-Intensity Training Intervention in the 8-Week Conditioning Program”.

Conclusion:

Within the limitation of the present study conclusion can be drawn with Insignificant difference was found in all the parameter like maximum power, minimum power, average power and Fatigue Index of Soccer and Basketball player.

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