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## Study of selected physiological parameters of female gymnasts in relation to their performance

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### Abstract

Performance in sports is not only related to physical strength and skill; rather physiological aspects are deeply related to it. Women artistic gymnastics consist of variety of skills on various apparatus. This study aimed to find out the relationship of selected physiological parameters of female gymnasts with their performance. For this purpose the researcher selected 75 artistic female gymnasts, age ranges between 18-25 years, who participated in All India Inter-University gymnastic championship. The official results of the All India Inter University Gymnastics Championship were considered as performance of the gymnasts. Purposive sampling technique was applied to select the sample. Physiological parameters i.e. Blood Pressure (systolic and diastolic) at resting was selected for this study. To find out the relationship of resting blood pressure with performance, Zero Order Product Moment method of correlation was used. The level of significance was set at 0.05. The results showed that there is no significant correlation found between blood pressure (systolic and diastolic) and performance of female gymnasts.

**Keywords:** Blood pressure, systolic, diastolic, gymnastic, performance

### Introduction

Performance in sports is not only related to physical strength and skill; rather physiological aspects are deeply related to it. According to (Hirata, 1979) In order to win in international sports superb physical fitness and best training of the individual are important factors. Therefore, one has to face emergency task that demands great amount of strength, speed, and energy etc. which will contribute to the general physical fitness of an individuals. Female artistic gymnasts are reported to be a special group in respect of biological development and performance characteristics when compared with female or male athletes representing some other sports events. To meet the criteria for elite level performance, physiological demands in gymnasts are continuously increased. Sharma and Nigam (2010) [3] conducted study to compare the physiological variables in relation to performance of 63 elite gymnast of Inter-University level. Blood pressure (systolic and diastolic) and the heart rate, winning performance scores of elite male and female gymnasts were chosen as the criterion measures for the study. The results of the study indicated that both blood pressure and heart rate of elite male and female gymnasts were raised after the performance on competitive apparatus. There was no correlation found between competitive performance of both gender and selected physiological parameters.

### Material and Methods

The purpose of the study was to find out the relationship of resting blood pressure of female gymnast in relation to their performance. Total seventy five (N=75) artistic female gymnasts (age ranges between 18-25 years) were selected who represented in All India Inter-University Gymnastic Championship. The official results of the All India Inter University Gymnastics Championship were considered as performance of the female gymnasts. Blood pressure was assessed by using sphygmomanometer. For interpretation of the data statistical technique of Zero Order Product Moment method of correlation was applied to find out the relationship if any, significant level of 0.05 was fixed.

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**Variables**

Physiological Variable

Blood Pressure:-

- a) Systolic pressure
- b) Diastolic pressure

**Analysis of Data and Results**

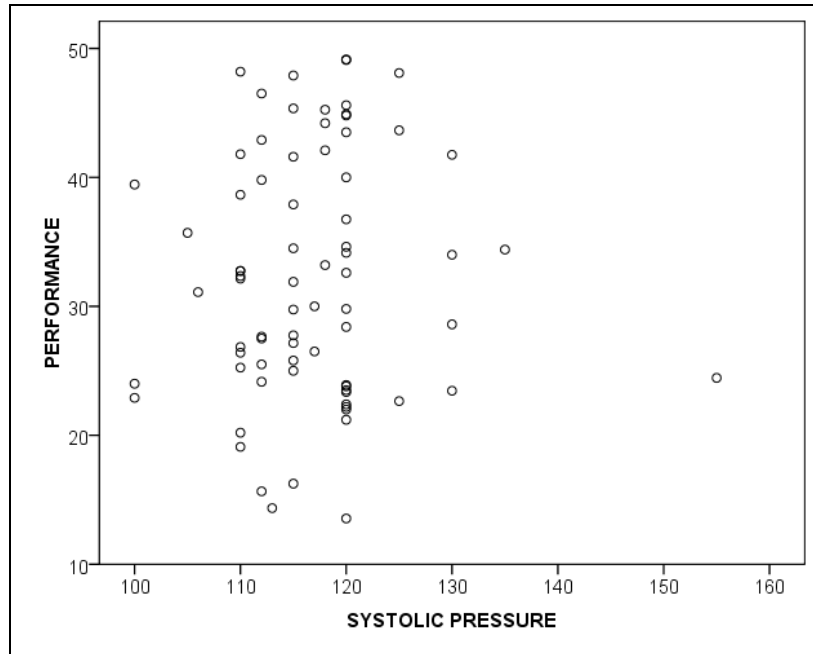
Different types of descriptive statistic such as mean and standard deviation was computed to describe each variable

statistically. The level of significance was set at .05. Its results have been depicted in the following table.

**Table 1:** Descriptive Statistics of Systolic Pressure And Performance

Variable	Mean	S.D.	R
Systolic Pressure	116.68	8.065	.041
Performance	32.21	9.480	

\*Significant at 0.05 level, Degree of freedom= 73



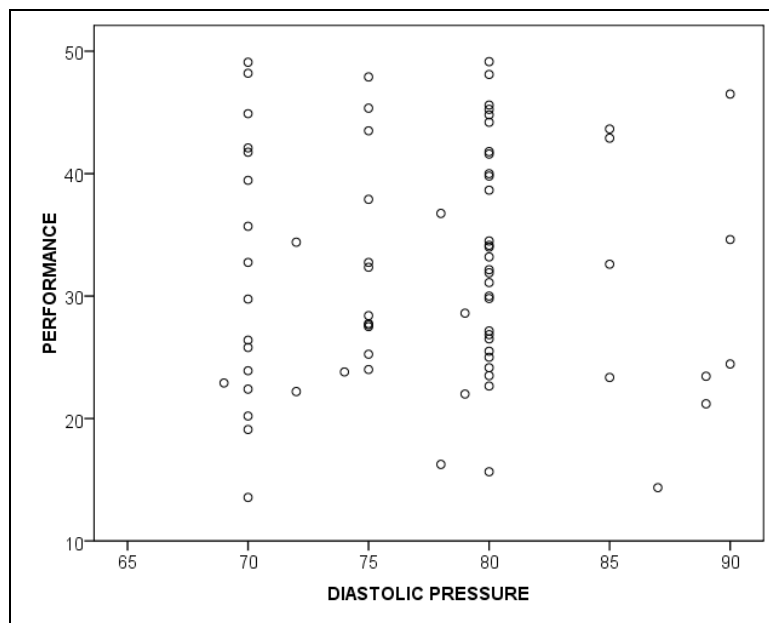
Scatter plot of correlation between systolic pressure and performance

**Scatter plot-1** show that the mean of the systolic pressure and performance is 116.68 and 32.213 respectively. Whereas standard deviation of the systolic pressure and performance is 8.065 and 9.480 respectively, 'r' value is .041. The result reveals insignificant correlation between systolic pressure and competitive performance of female gymnasts.

**Table 2:** Descriptive Statistics of Diastolic Pressure and Performance

Variable	Mean	S.D.	R
Diastolic Pressure	77.54	5.641	.011
Performance	32.21	9.480	

\*Significant at 0.05 level, Degree of freedom= 73



Scatter plot of correlation between diastolic pressure and performance

**Scatter plot: 2** shows that the mean of the diastolic pressure and performance is 77.54 and 32.213 respectively. Whereas

standard deviation of the diastolic pressure and performance is 5.641 and 9.480 respectively, 'r' value is .011. The result

reveals insignificant correlation between diastolic pressure and competitive performance of female gymnasts.

### **Discussion of the Findings**

The present study was designed to investigate the relationship between resting blood pressure with performance of female gymnasts. It is evident from the results of the study that there is no statistically significant correlation found between resting blood pressure (systolic and diastolic) with performance. Sharma and Nigam (2010) <sup>[3]</sup> supported the findings of present study as there study also found insignificant correlation between winning performance scores and blood pressure of elite male and female gymnasts. These results of the present study confirmed with the findings of Abass A.O. *et al.* (2011) <sup>[1]</sup> who reported there was no significant relation found between systolic pressure, diastolic pressure and performance.

### **Conclusion**

- The study concluded that systolic blood pressure of female gymnasts has insignificant correlation with performance.
- It was also concluded that diastolic blood pressure of female gymnasts has insignificant correlation with performance.

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