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A comparative analysis of selected physiological variables between men and women gymnastics and mallakhamb performers

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Abstract
The purpose of the study was to compare the selected physiological variables between men and women Gymnastics and Mallakhamb Performers. To achieve this purpose of the study, only sixty players were selected. Among them, fifteen men Gymnastics players, fifteen men Mallakhamb Performers, fifteen women Gymnastics players and fifteen women Mallakhamb Performers studying in various colleges in Villupuram District, Tamil Nadu, India with a age group of 18 to 24 years were selected at random. The following physiological variables such as breath holding time and resting pulse rate were selected as criterion variables. The data were collected from men and women Gymnastics and Mallakhamb Performers on breath holding time and resting pulse rate by using holding the breath for time and taking radial pulse respectively. Two way analysis of variance was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed to the level of significance which was considered as an appropriate. The results of the study showed that there was significant differences exist between men and women players irrespective of the games on selected criterion variables and also the results of the study showed that there was significant differences exist between Gymnastics and Mallakhamb Performers irrespective of the gender of selected criterion variables. The results of the study further showed that there was a significant difference between men and women Gymnastics and Mallakhamb Performers on selected criterion variables such as breath holding time and resting pulse rate.

Keywords: Mallakhamb, gymnastics, pulse, physiological, women

Introduction
A sound mind in a sound body is a short but full description of a happy state in this world. This state can be brought about by not merely "not being sick" or "being well". It is a positive quality extending from death to abundant life. Physiology is the study about the function of human body. Physiological developments determine one's abilities, capacities and potentialities that an individual does exhibit. There are other various physiological factors such as pulse rate, breath holding time, etc., which determine the physiological development as a whole. The resting pulse rate or heart rate varies greatly among different people and in the same person under different situations. Breath holding time is the time taken by one who holds his breath at rest. The physiology of breath holding involves respiratory, circulatory and cardio changes, all of which are important in the light of recent research.

Methodology
The purpose of the study was to compare the selected physiological variables between men and women Gymnastics and Mallakhamb Performers. To achieve this purpose of the study, only sixty players were selected. Among them, fifteen men Gymnastics players, fifteen men Mallakhamb Performers, fifteen women Gymnastics players and fifteen women Mallakhamb Performers studying in various colleges in Villupuram District, Tamil Nadu, India with a age group of 18 to 24 years were selected at random. The following physiological variables such as breath holding time and resting pulse rate were selected as criterion variables. The data were collected from men and women Gymnastics and Mallakhamb Performers on breath holding time and resting pulse rate by using holding the breath for time and taking radial pulse respectively. Two way analysis of variance was used to analyze the significant difference, if any among the groups. The .05 level of confidence was fixed to the level of significance which was considered as an appropriate.

Analysis of the data
Breath holding time
The mean and standard deviation values on breath holding time of men and women Gymnastics and Mallakhamb Performers have been analyzed and presented in table-I.

Table I: The mean and standard deviation values on breath holding time of men and women gymnastics and mallakhamb performers.

Groups/Games		Gymnastics	Mallakhamb
Men	Mean	42.47	45.47
	Standard deviation	1.15	1.20
Women	Mean	32.40	36.13
	Standard deviation	1.08	1.09

The table I show that the mean values of men Gymnastics performers, men Mallakhamb Performers, women Gymnastics performers and women Mallakhamb performers on breath holding time were 42.47, 45.47, 32.40 and 36.13 respectively.
The two way analysis of variance values on breath holding

time of men and women Gymnastics and Mallakhamb Performers have been presented in table-II

Table II: The two way analysis of variance on breath holding time of men and women gymnastics and mallakhamb performers

Source of variance	Sum of squares	df	Mean squares	Obtained 'F' ratio
Total	2070.40	59	35.09	
A factor (game)	281.67	1	281.67	216.64*
B factor (gender)	1706.67	1	1706.67	1312.82*
AB factor (interaction)	5.39	1	5.39	4.15*
Within or Error	76.67	56	1.43	

Table-II shows that the obtained 'F' ratio value 216.64 for row (Gymnastics and Mallakhamb) on breath holding time which is greater than the required table value 4.016 for significance with df 1 and 56. It further shows that the obtained 'F' ratio value 1312.82 for column (men and women) on breath holding time which is greater than the required table value 4.016 for significance with df 1 and 56. It also shows that the obtained 'F' ratio value 4.15 for interaction effect (game * gender) on breath holding time which is greater than the required table value 4.016 for significance with df 1 and 56.

The result of the study indicated that there was a significant difference between men and women players irrespective of games (Gymnastics and Mallakhamb) on breath holding time.

The results of the study further showed that there was a significant difference between Gymnastics and Mallakhamb Performers on breath holding time irrespective of their gender (men and women). Hence, it was concluded from the mean values that the improvement of breath holding time was in favor of men Mallakhamb Performers.

The results of the study also indicated that there was a significant difference between men and women Gymnastics and Mallakhamb Performers on breath holding time.

Resting pulse rate

The mean and standard deviation values on resting pulse rate of men and women Gymnastics and Mallakhamb Performers have been analyzed and presented in table-III.

Table III: The mean and standard deviation values on resting pulse rate of men and women gymnastics and mallakhamb performers.

Groups		Gymnastics	Mallakhamb
Men	Mean	60.47	65.2
	Standard deviation	1.54	1.12
Women	Mean	60.27	67.47
	Standard deviation	1.60	1.09

The table III shows that the mean values of men Gymnastics performers, men Mallakhamb Performers, women Gymnastics performers and women Mallakhamb Performers on resting pulse rate were 60.47, 65.2, 60.27 and 67.47 respectively.

The two way analysis of variance values on resting pulse rate of men and women Gymnastics and Mallakhamb Performers have been presented in t able-IV.

Table IV: The two way analysis of variance on resting pulse rate of men and women gymnastics and mallakhamb performers

Source of variance	Sum of squares	df	Mean squares	Obtained 'F' ratio
Total	683.65	59	11.59	
A factor (game)	534.02	1	534.02	271.08*
B factor (gender)	16.02	1	16.02	8.13*
AB factor (interaction)	22.81	1	22.81	11.57*
Within or Error	110.80	56	1.97	

Table-IV shows that the obtained 'F' ratio values 271.08 for row (Gymnastics and Mallakhamb) on resting pulse rate which is greater than the required table value 4.016 for significance with df 1 and 56. It further shows that the obtained 'F' ratio value 8.13 for column (men and women) on resting pulse rate which is greater than the required table value 4.016 for significance with df 1 and 56. It also shows that the obtained 'F' ratio value 11.57 for interaction effect (game * gender) on resting pulse rate which is greater than the required table value 4.016 for significance with df 1 and 56.

The result of the study indicated that there was a significant difference between men and women players irrespective of games (Gymnastics and Mallakhamb) on resting pulse rate.

The results of the study further showed that there was a significant difference between Gymnastics and Mallakhamb Performers on resting pulse rate irrespective of their gender (men and women). Hence, it was concluded from the mean values that the improvement of resting pulse rate was in favor of women Mallakhamb Performers.

The results of the study also indicated that there was a significant difference between men and women Gymnastics and Mallakhamb Performers on resting pulse rate.

Conclusions

From the analysis of the data, the following conclusions were drawn.

1. There was a significant difference between men and women performers on selected physiological variables such as breath holding time and resting pulse rate irrespective of their games (Gymnastics and Mallakhamb).
2. There was a significant difference between Gymnastics and Mallakhamb Performers on selected physiological variables such as breath holding time and resting pulse rate irrespective of their gender (men and women).
3. There was a significant difference between men and women Gymnastics and Mallakhamb Performers on selected physiological variables such as breath holding time and resting pulse rate.

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